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125 W. K. Estes. Reinforcement in human learning. December 20, 1967. (In J. Tapp (Ed.), Reinforcement and behavior. New York: Academic Press, 1969. Pp. 63-94.)

126 G. L. Wolford, D. L. Wessel, and W. K. Estes. Further evidence concerning scanning and sampling assumptions of visual detection models. January 31, 1968. (Perception and Psychophysics, 1968, 3, 439-444.)

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128 J. Holmgren. Visual detection with imperfect recognition. March 29, 1968. (Perception and Psychophysics, 1968, 4(4),   .)

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DEAF ENGLISH--AN INVESTIGATION OF THE WRITTEN ENGLISH COMPETENCE

OF DEAF ADOLESCENTS

by

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4

INTRODUCTION

In this paper the hypothesis is put forward that the prelingually deaf, after seven or eight years of instruction in the English language, do not become proficient in Standard English. Rather, they develop a non-standard dialect of their own, which may tentatively be called "Deaf English". This dialect may include structures that can be identified as Standard English, and it most certainly includes constructions and grammatical forms that cannot be identified as Standard English. In the past, such forms have been considered erroneous, and have been referred to as "deafisms". It is the contention of this author that certain of these "deafisms" are quite widespread among the deaf--particularly among the deaf at a given educational institution-- and that, because they are <u>shared</u> constructions, they should not be considered errors. Rather, because of this factor of shared usage, "deafisms" might be looked upon as the earmarks of a dialect of English-- nonstandard--in somewhat the same vein as Black English.

The purpose of this dissertation is to determine what sort of grammatical constructions are used by deaf students in their written English, which seem more "natural" to them, and how common these constructions are from one student to the next. Two principal questions are raised:

(1) Is there a fairly regular (non-standard) dialect which the deaf use for their written communication--a "Deaf English"?

(2) Will deaf subjects perform as well in a written repetition test using a "Deaf English" as normal-hearing subjects would in a similar test using Standard English?

To determine the answers to these questions I will first discuss the historical background of deaf education, and the linguistic and cognitive abilities of the deaf. Chapter 2 will cover in greater depth the linguistic competence of the deaf, in Sign Language, English, and idiosyncratic (gesture) language, and will offer evidence that the deaf learn English as a foreign language. Chapter 3 will describe some common "deafisms", and will compare them with the sort of constructions found in non-standard dialects and pidgins. The first three chapters suggest a partial answer to question (1) above, by presenting historical and anecdotal evidence for the existence of a non-standard "Deaf English". The differences between Deaf English and Standard English appear to be due to various aspects of the handicap of deafness: a dearth of input, a lack of feedback, and, possibly, interference from American Sign Language or other gestural communication. Chapter 4 will describe the experiment which this author used to determine empirically the validity of the hypothesis that Deaf English is a dialect, and will present the results. The experiment also attempts to answer question (2) above, "equalizing the handicap" (Baratz, 1969) by giving deaf subjects a written repetition task in "Deaf English" and Standard English, and comparing their performance with that of a hearing control group. The final chapter will discuss the results with reference to the hypothesis, explain the findings, and conclude.

CHAPTER 1

1.1 Historical Background of Deaf Education in the United States

Until recently, there have been two major trends in the education
of the deaf in the United States: (1) the purely manual (gestural); and
(2) the purely oral.

1.1.1 Manual Education

It is reasonable to say that the purely manual method has been
around much longer than the purely oral method, as it relies upon natural
gestures in a modality that is normal and reasonable for the deaf--the
visual/gestural modality. Nor does the fact that this method is old
necessarily detract from its value. Best (1943) explains that the
Hebrews, Egyptians, Greeks and Romans appeared to have used a finger
notation or symbolization (for communication purposes), and notes that
illustrations of the manual alphabet extend back into the early Christian
era. The first regular instruction of the deaf by means of signs, however,
probably did not take place until the sixteenth century, in Spain, by
Pedro Ponce de Leon. This was followed by the publication in 1620 of
the letters of the one-handed alphabet, by Juan Pablo Bonet (Abernathy,
1959).

But probably the best-known and most important individual concerned
with the education of the deaf in the manual mode is Charles Michel,
Abbé de l'Epée. In Paris, de l'Epée founded the first institution for
the deaf without regard to social condition, and in 1776 published the
first systematic method of education for the deaf, <u>L'institution des</u>
<u>sourds et muets par la voie des signes méthodiques.</u>

It was de l'Epée's philosophy and methodology of deaf education which became the basis for American education of the deaf in the early nineteenth century. Thomas Hopkins Gallaudet, an American educator of the deaf, opened the first permanent school for the deaf in America, in Hartford, Connecticut, in 1817. Gallaudet had previously visited England in order to learn methods of educating the deaf. However, he had been refused access to the (oral) programs for deaf education in both London and Edinburgh, because of the secretive and monopolizing spirit prevalent in England's schools for the deaf at that time. As a result, he travelled to Paris, where he was very much impressed by the system of deaf education instituted by de l'Epée, and was instructed in the language of signs and the manual alphabet by de l'Epée's successor, the Abbé Sicard (Abernathy, 1959). The education of the deaf in the United States began with signs and finger-spelling upon Gallaudet's return. Nonetheless, from a century ago, and until only recently, "'signing' has been strictly prohibited in a few schools; discouraged or neglected in the rest" (Stokoe, 1971, p. 1).

1.1.2 Oral Education

The purely oral method of educating the deaf in the United States is based upon the 1700 work of a Dutch religious leader and oralist pioneer, Johann Conrad Amman. It was Amman who influenced those charitable organizations which conducted the early education of the deaf in England. These institutions were run by fierce evangelical reformers, who based their educational philosophy on Amman's doctrine that "speech is a gift of God and that its imperfection is a 'most melancholy proof' of man's fall." (Siegel, 1969, p. 97) This purely religious motivation

for oral education was later modified somewhat: the premise which underlies books by John Herries (The Elements of Speech, London, 1773), Joseph Watson (Instruction of the Deaf and Dumb, London, 1809), and Francis Green (Vox Oculis Subjecta, London, 1783) is that human speech is the distinguishing characteristic between human beings and animals. Oral education of the deaf in the United States was begun in 1867, with the founding of the Clarke School for the ___f in Northampton, Massachusetts, and a small Jewish oral school in New York. Despite initial opposition from the American School for the Deaf in Hartford, the oral method soon became the preferred mode of instruction.

1.2 Current Education

The oral method of deaf education, which is restricted to speech, speechreading (lipreading), reading, writing, and hearing amplification, has dominated the administration and education of deaf students in the United States for the past century. Since the inception of oral education in the United States, there has been no purely manual educational system of deaf education. Any school which employs some sort of manual method also teaches oral skills (speech and speechreading), although possibly with less emphasis on hearing amplification and the utilization of residual hearing than in the purely oral schools. In turn, in some oral schools, which as a rule prohibit or discourage the use of sign and fingerspelling, the deaf child may pick up sign language from his peers (or the students may develop a gesture language among themselves--Nancy Frishberg, personal communication, 1973). Nonetheless, it is possible that a given deaf child (of hearing parents) will never learn any accepted form of sign language because of the lack of exposure to it, and in spite

of lengthy exposure to oral methods, may never learn an acceptable form
of English--spoken or written--because of the impracticality and unrealism
of the method and of the teaching techniques it requires. I shall
discuss this situation further on in the paper.

Recently, there have been some innovations in oral and manual
educational techniques. At Gallaudet College, Cornett (1967) has developed
a variation of the oral method, called Cued Speech, not primarily as a
teaching technique, but rather as an aid to deaf adults in comprehending
spoken material. Cued Speech is speechreading accompanied by a few
specially devised hand movements (not signs) performed by the speaker
near his or her face. These gestures act as "distinctive features" to
signal differences between phonemes which cannot be discerned from the
lips alone (e.g., the voicing distinction between /b/ and /p/, or nasal-
ization). The Rochester Method, which has been in use for some time at
a few schools for the deaf, is primarily the oral method (speechreading
and speaking) supplemented by simultaneous fingerspelling (Scouten, 1967).
The "Simultaneous Method", also called "Total Communication" (Santa Ana
Unified School District, 1971), has begun to be used in schools for the
deaf and in a few preschool programs in a number of places in the United
States. This method combines all the oral skills (and hearing amplifi-
cation for those children who can benefit from it) with fingerspelling
and a form of sign language--Signed English--which corresponds to spoken
English inflections and word-order. A form of manual English which has
recently been devised for use in Total Communication situations is S.E.E.--
"Signing Essential English". This system of signing attempts to duplicate
the entire morphology of English, and provides signs for English

determiners, inflections, tense markers, pronouns, and other items which would (normally) have to be fingerspelled in ordinary Signed English. The goal of S.E.E. is to restructure sign language such that it conforms exactly to the morphology, grammar and syntax of English (American Sign Language--ASL--has a very different grammatical structure from English), in order to facilitate the deaf child's learning of English, spoken or written (Washburn, 1972). As yet there are no reports of any systematic evaluations of any of these new methods.

1.3. Evaluation of Oral and Manual Instruction

Debate has raged between supporters of the manual and oral techniques of deaf education, regarding the relative values of these two main methods. Oralists argue that any signing on the part of the deaf child should be prohibited, as it will detract from his learning and accurate usage of English. They believe that all possible emphasis should be placed on teaching the societal language, orally and with auditory amplification, since the deaf child must learn to function among hearing people who speak English. Manualists are not averse to the deaf child's learning English, and speaking and speechreading skills, but they argue that education of the deaf should include (and in many cases even begin with) a formal language of gestures: some form of sign communication and fingerspelling. They do not fear that sign language will retard or discourage the acquisition of English or of oral skills, but they do believe that without manual communication the deaf child is truly handicapped, unable to communicate until well after he has begun school, in a modality and a language that are foreign to him in all ways, and excruciatingly difficult to master. This debate has been labelled the Oralist-

Manualist Controversy, but given the fact that no oral programs include
signing, and all manual programs include an oral component, this is
actually a misnomer.

Of late, there have been a number of studies comparing the relative
merits of the two systems of deaf education. Nearly all of these studies
have indicated that manual training facilitates the cognitive, educational
and social development of the deaf child. Results of the many studies
reviewed by Mindel and Vernon (1971) and Vernon and Koh (1970) showed
that manual groups were superior to comparison oral groups in overall
educational achievement, mathematics, reading, speechreading, and social
adjustment. Only one study among those reviewed showed a deficit for
children with manual training, and that deficit was specific to the area
of speech (Quigley, 1969; Quigley and Frisina, 1961). In a later study
Vernon and Koh (1971) used manually trained deaf children (of deaf
parents), and oral preschool deaf children, of hearing parents with
pedigrees of genetic deafness, to rule out the possibil y of brain
damage. Results once again indicated that the use of early manual
communication produces better overall educational achievement, including
superiority in reading skills and written language. In another study,
Vernon and Koh (1971) found that children with early manual communication
training were superior to deaf children in an oral preschool program and
to deaf children (of hearing parents) without any preschool training,
both in certain language skills (reading and paragraph meaning) and in
general academic skills. In speech and speechreading there were no
significant differences among the three groups.

The above research casts doubt upon the appropriateness today of a
strictly oral program. Changes in the etiology of deafness in the last

fifty years (cf. Meadow, 1967; Vernon, 1968) support this conclusion.
In the past, a large percentage of the deaf population had lost their
hearing as a result of scarlet fever, mastoiditis, men   s, ear
infections, and other post-lingual, adventitious conditions. Nowadays,
only a small percentage of the deaf lose their hearing as a result of
accidents or diseases in childhood; rather, most deafness today is either
genetic in origin or a result of maternal rubella. Consequently, in the
last fifty years there has been a marked increase in prelingual deafness
relative to post-lingual deafness. Whereas, early in this century,
approximately two-thirds of the deaf had lost their hearing prelingually,
today about 95 percent of deaf children are prelingually deaf, and this
trend toward more prelingual deafness is likely to continue (Brill, 1963).
This change in the age of onset of deafness may correspond to changes in
the deaf child's performance capabilities which will necessitate a
transformation in the methods of educating the deaf.

The above studies seem to demonstrate the value of early manual-
language training for deaf children, and show the superiority of manually-
trained deaf persons over orally-trained deaf persons. Nonetheless, in
comparison with hearing children of the same socio-economic background,
all deaf children, regardless of the teaching method they have been
subjected to, have generally been found to be deficient in educational
achievement and reading and writing ability. It was thought for many
years that this deficit could be attributed to a general cognitive deficit
which was felt to be a concomitant of deafness. Indeed, results of
numerous early research studies examining the cognitive abilities of
the deaf tended to uphold this traditional view that the deaf were

somehow mentally or cognitively inferior to the hearing. In their (1941) review of a series of studies of mental development in the deaf, Pintner, Eisenson and Stanton found that the average scores of deaf children in I.Q. on non-language performance tests were ten points below hearing children's average scores. Nisbet (1953) used the evidence culled by Pintner et al. to support his view that the restriction of normal language growth in deaf children depresses their performance on intelligence tests. Bereiter and Engelmann (1966) continue to view the deaf as both a language-disadvantaged and a cognitively retarded group despite newer strong evidence to the contrary.

A review of 31 studies of intelligence performed between 1930 and 1966 (Vernon, 1967) showed the deaf to have superior scores to hearing controls in thirteen of the studies, inferior scores in eleven, and no significant differences in seven. In their review of 50 later studies, Mindel and Vernon (1971) concluded that the deaf and the hearing have a similar distribution of intelligence. According to these studies, then, there should be no mental or cognitive deficit which causes the deaf to perform more poorly than the hearing in educational tasks.

1.4 Educational Achievement

It would appear, then, that deafness itself and the linguistic and communicative barrier which it sets up, must account for the deaf student's deficiencies in educational achievement and reading and writing ability. This is further supported by the finding, by Pintner, Eisenson and Stanton (1941), that postlingually deafened children achieved relatively more on educational tests than the prelingually deaf. Acquisition of language prior to loss of hearing changes the educational picture consider-ably.

There have been many studies in the past fifteen years of the educational performance of deaf children. Miller (1958) and Goetsinger and Rousey (1959) found that the general educational attainment of deaf children was far below that of hearing students from similar backgrounds. Moores (1970b) described the situation as a cumulative deficit: the deaf child begins his schooling with a disadvantage, and his academic development increases at a significantly slower rate than a hearing child's. The result is that the difference between the hearing and the deaf children in academic achievement becomes greater over time.

In studies of reading performance exclusively, the deaf once again score well below the hearing. Wrightstone, Aronow and Moskowitz (1963) undertook a comprehensive reading study of 5,224 deaf students between the ages of 10.5 and 16.5 years, and found that the mean grade equivalent scores for the deaf students increased from grade level 2.8 to grade level 3.5 in six years. Furth (1966) noted that the youngest children in this study (10.5 to 11.5 years old) scored barely above the chance level, which suggests that many of the above-chance scores were due to random guessing. What is more, many of the test items did not really require comprehension of the material, as correct choices could be made by simply matching the test items to words in the reading sample. Furth went on to say that only about one-fifth of those deaf students who continued in school ever attained a reading grade equivalent score of 4.9 or better, and that since reading tests below Grade 4 generally sample only fragmentary aspects of language, only a small percentage of the deaf students studied had developed a functional level of reading skill. More recently, Boatner (1965) and McClure (1966) examined the

reading ability of 93 percent of the deaf students in the United States, aged sixteen or over, and found that only 5 percent of them were reading at grade level 10 or better, while 60 percent were reading at grade level 5.3 or below. Furthermore, most of the higher scores were obtained by hard-of-hearing or postlingually deafened students. (It should be noted, although it may seem obvious, that the population of deaf persons who are still students at age sixteen or over would include the more intelligent, better-educated, and higher achievers among the deaf--those who are attending, or will attend, college.) As the retardation of the deaf in reading performance has typically been assessed through standardized reading tests, even these low levels of reading achievement noted above may be overestimates. This conclusion is supported by Moores' (1970a) finding that hearing subjects matched with deaf subjects on reading achievement scores still showed superior performance on tests of syntax and semantics.

Vocabulary has often been tested along with written English, and here, too, the deaf exhibit much slower--and sometimes different--development from the hearing. Schulze (1965) found that deaf adolescents' vocabulary was meager and showed a four-year lag in development in comparison with hearing students of comparable age. Furthermore, the particular vocabulary entries were different--only 56 percent of the deaf students' vocabulary was shared by the hearing students. Templin (1966, 1967) also found deaf children's vocabulary development and proper vocabulary usage to be significantly inferior to that of the hearing. Myklebust (1964) reviewed the development of written language skills in the deaf, and concluded that the deaf subjects reached a level of verbal facility

equal to about two-thirds the normal level, and that this ratio of achievement remained fairly constant throughout their schooling. Marshall and Quigley (1970) have studied the written language of hearing-impaired students over a nine-year period. They have found that the deaf subjects improved over time in their written language (measured in terms of sentence length in words, number of clauses per sentence, and ratio of subordinate clauses to main clauses). But the deaf subjects were significantly retarded in comparison to hearing subjects of the same age in the grammatical complexity, and hence the maturity, of their writing samples. And Dunagan (1969) observed that in comparisons of written compositions by deaf and hearing subjects matched on reading level, the deaf made more syntactic errors than the hearing.

1.5 English Processing Abilities

Problems in reading and writing English are prevalent among all school children, but the vastly greater problem among deaf students suggests more than a mere deficit in reading skills. Obviously, the low reading grade equivalent scores achieved by the majority of deaf students, of all levels of intelligence, must be due to specific linguistic problems-- notably, the inability to hear, and consequently the great difficulty in learning English. The same problems in learning to read and write English exist, to a lesser extent, among young children for whom English is not a native language: the difficulties in first learning the reading skills are compounded by the absence of, or the insufficient knowledge of, the language to be read.

Tests have been undertaken to determine the relative competence of
the deaf and hearing in English processing ability, in an attempt to
account for the retarded reading and writing capability of deaf students.
Odom and Blanton (1967), intrigued by Fodor and Bever's (1965) finding
that hearing subjects tend to perceive auditorily-presented clicks at
constituent phrase boundaries, attempted to determine whether prelingually
deaf persons perceive English phrase structure in the same way as hearing
subjects. Deaf subjects were compared with hearing fifth graders
(controls for reading level) and hearing twelfth graders (controls for
age) on the learning of segments of written English: One-third of the
English segments were "phrasally" defined (e.g., "paid the tall lady"),
one-third were not "phrasally" defined but were in acceptable English
word order (e.g., "lady paid the tall"), and one-third were scrambled
words (e.g., "lady tall the paid"). The experimental task required the
subjects to recall each entire segment correctly after twelve study-test
trials. Both groups of hearing subjects showed facilitation on the
phrasally defined segments and interference on the scrambled segments,
but the deaf subjects showed no differential recall as a function of
phrase structure. This led the experimenters to conclude tentatively
that the deaf did not process English structure in the same way as the
hearing subjects. It appears to this author that there is a fairly
straightforward explanation for this phenomenon. A number of studies of
linguistic memory (cf. Miller and Selfridge, 1953; Miller, 1962)
have tended to prove the commonsense idea that meaningful linguistic
material is easier to memorize and recall than nonsense or anomalous
linguistic material. It is logical, then, to suppose that the deaf

subjects above were able to ascribe some sort of meaning to the scrambled
words--as much meaning as they were able to ascribe to the English-ordered
phrases. Interestingly, studies of American Sign Language (ASL) have
demonstrated an absence of (English-type) determiners, tense-inflections,
certain prepositions and other grammatical function-words which are
characteristic of English grammar. (There are, as well, many spoken
languages which lack one or many of the functors which appear to be so
crucial in English; these languages are nonetheless capable of conveying
the same amount of information as English.) Furthermore, the word-order
(or more correctly, sign-order) of ASL is often quite different from that
of English, and, as demonstrated by Tervoort (1968), most different
orderings of the same set of signs, although producing different meanings
or intents, can all be equally correct grammatically. Thus, for a deaf
student who is fairly unfamiliar with the complexities of English grammar,
or who, like many deaf students, has an uninflected, grammatically "simple"
gesture or sign language, English functors may be relatively meaningless,
and when encountered may just be ignored (cf. Stokoe, 1972). For such a
subject, a "scrambled"-word segment, with functors ignored as irrelevant,
can be just as meaningful (or meaningless) as a segment in correct
English word-order. For example, the segment

    1(a) paid the tall lady

translated into ASL, might look like

    1(b) pai(d) tall lady

and the segment

    2(a) lady paid the tall

in ASL, might look like

    2(b) lady pai(d), tall

19

(where "tall" refers to "lady"). The scrambled English

 $\quad$ 3(a). lady tall the paid

becomes ASL :

 $\quad$ 3(b). lady tall pai(d)

(where Noun-Adj. is a perfectly acceptable sign-order).

All of the segments are thus probably equally meaningful to the deaf adolescent, who, whether or not he has been exposed to ASL, is, by sheer lack of exposure to and experience with English, not as confined by English word-order. Consequently, the deaf child is as capable of finding meaning--the same amount of meaning--in segments that are "scrambled" by English syntax standards, as in well-ordered English. It should be made clean, of course, that the kind of "meaning" that the deaf child ascribes to all the segments is probably not the same as that which a hearing English-speaker would ascribe--as has been suggested in the above examples. In these examples, the meanings of all three segments, as hypothetically understood by a deaf child, are the same.

This hypothesis--that the deaf do not understand English as native speakers do, but rather process English sentences as though they were ASL or some other code more "natural" to a gesture-based, visual mode of language-processing--gains support from another series of studies by Odom, Blanton and Nunnally (1967), using the "cloze" technique. The "cloze" technique requires subjects to fill in one or more words deleted from a sentence. The deaf students in these studies performed at a significantly lower level than the hearing subjects. Furthermore, the authors found that "syntactic (function) words were more difficult to recognize an restore than semantic (content) words" (p. 826). And

although reading achievement scores were positively correlated with
the scores on the cloze procedure for hearing subjects, the scores were
uncorrelated for deaf subjects. Another difference was that the deaf,
unlike the hearing controls, increased their ability to predict the
correct form class of function words as the span between deleted words
increased. The investigators once again suggested that the deaf and
hearing used different types of rules in constructing English sentences,
particularly with regard to function words. My own explanation of the
above results is slightly different from that of Odom et al. I suggest
that the deaf are constructing a different variety of English, based on
an internalization of certain rules of English, but not others, and
affected, in some cases, by interference from ASL, whose rules are
radically different from those of English. The result is the hypothesized
"Deaf English".

Schmitt (1968) compared eight-, eleven-, fourteen-, and seventeen-
year-old deaf children with eight-year-old hearing children on tasks of
comprehension and production of different types of syntactic structures.
The tasks included picture and printed sentence matching items and
multiple-choice sentence filler items. Not surprisingly, in light of the
above research, the combined task mean score of the eight-year-old
hearing children was significantly higher than that of the seventeen-
year-old deaf subjects. Although the scores for the deaf children
generally increased with age, there were interesting exceptions, in which
the younger deaf children achieved higher scores on specific syntactic
constructions. These exceptions could be explained by the fact that,
at different times during their formal education, many deaf children are

taught specific syntactic rules, and that some of the early-learned
English grammar rules either are not completely internalized or are
forgotten. We had suggested elsewhere (cf. Bonvillian, Charrow and
Nelson, 1973, p. 329) that Schmitt may not have been measuring the
deaf child's competence in English, but rather a reflection of the
English teaching programs most recently encountered by the child. I now
feel it is necessary to modify that suggestion. True, at earlier ages,
Schmitt did appear to encounter residues or reflections of given English
teaching programs or techniques. However, by age seventeen, it does not
seem reasonable that the subjects' English was still under the influence
of specific English programs. From my own acquaintance with older deaf
students, their teachers, and their (written) English, it appears, rather
that most deaf students end up with very similar English-usage abilities,
regardless of the teaching program or technique. Some things in English,
no matter how they are taught, appear to be more difficult for a deaf
child to retain or produce correctly in the proper context than others.
(As yet there has been no systematic evaluation of the very newest methods;
which use a morphologically very elaborate Signed English such as S.E.E.
from a very early age, and which may prove to be more effective than any
previous method.) By his teens--if Lenneberg is correct in his hypothesis
of an adolescent cut-off age for effective language-learning--the deaf
student will have retained, and be able to apply, as much of his
abbreviated English rule-system as he ever will. Any new English
teaching methods or programs beyond the early teens will probably have
little effect upon his English competence. Thus, any special effects of
specific English teaching programs should have little place in the scores
of the seventeen- and possibly the fourteen-year-olds.

Cooper (1967) gave deaf and hearing subjects seven to nine years of
age a written test based on Berko's (1958) study of the child's acquisition
of English morphology. The hearing subjects' performance was signifi-
cantly better than that of the deaf, although patterns of item difficulty
were similar for both groups. Both the groups were most similar in their
knowledge of morphological rules (e.g., past tense and plural markers)
and furthest apart in their knowledge of derivational rules (e.g.,
nominalization of verbs).

From all of the above it can be seen that the deaf, although no
longer believed to suffer from a cognitive deficit, are nonetheless
significantly retarded in comparison to the hearing, in general educational
achievement and in English language competence. Furthermore, the lacks
in educational attainment on the part of the deaf can, to a great extent,
be attributed to their difficulties in processing English. Deaf students
have been known to excel in mathematics (where language-type problems are
not involved); and in Youniss, Furth and Ross's (1971) study of logical
symbol use in deaf and hearing adolescents, deaf subjects, albeit
requiring additional training, achieved the highest levels in the test.
The deaf child's problem is not with logic, nor with mathematics, nor
with propositional thought, but with English, or the spoken language of
the community he inhabits. Deaf children in America are not born with
the ability to acquire naturally their "native" English. English is not
their native language--at least not English as English-speakers know it.
What may or may not be their native language will be discussed in the
next chapter, along with traditional views of the deaf as "languageless".

CHAPTER TWO

2.1 The "Languageless" View

If English cannot be considered the native language of the deaf in the United States, and if American Sign Language is the native language of only that small portion of the deaf population which is born to deaf parents, what is the "native" language of the rest of the deaf population? Do they have a true native language? Or are they, as many educators and researchers believed, and as some still do believe, essentially "languageless"?

To many investigators, deaf children have appeared to be the ideal population on which to test one aspect of the Sapir-Whorf hypothesis. That is, if the structure of a language influences the way the speaker thinks and views the world, then the absence, or a relative dearth, of language should correlate with disabilities in thinking, understanding, and solving problems. Consequently, in a number of studies of conceptual ability, the deaf have been used as "language-absent" controls.

Whether this view of the deaf is accurate or not will be discussed later. However, assuming that the deaf are "languageless", researchers have reached some interesting conclusions. Rosenstein, in a 1961 review of the literature, agreed with Oléron's (1950) assertion that the sphere of abstract thought was by no means closed to the deaf, although "access to it is more difficult for the deaf than the hearing" (p. 283). Furth, in his extensive (1964) review of the literature, went further than Rosenstein, concluding that "language does not influence intellectual development in any direct, general or decisive way." Carroll (1964) agreed with this conclusion and added that "These findings suggest

strongly that there can be a kind of 'thought' without language" (p. 74)..

In a more recent (1971) analysis, of thirty-nine studies undertaken in

the past decade involving comparisons of deaf and hearing subjects, Furth

provided more support for the idea that there can be thought without

language. Although the deaf subjects when compared to the hearing subjects

evinced a developmental time lag in their acquisition of logical structures,

Furth stated that the "thinking processes of deaf children and adoles-

cents were found to be similar to hearing subjects" (p. 58). In a (1971)

Piaget-type study with Youniss and Ross, however, Furth qualified his

views on the interaction between thought and language in the following

words: ". . . the evidence from our work with linguistically deficient

persons indicates that it [language] may have an indirect facilitating

effect on certain formal operations precisely because of the class relation

between formal operations and symbolic functioning" (pp. 63-4).

VanderWoude, in a (1970) examination of problem-solving processes

(in deaf and hearing subjects) used his profoundly deaf subjects "to.

control for the language variable" (p. 338). He found no differences

between the deaf and hearing subjects in final scores or in tactical

approaches to the problems, and concluded from this that there was no

necessary relationship between thought and language.

Such studies, although useful and interesting, are based upon a

dubious premise: namely, that the deaf are languageless, and can serve

as languageless controls in studies of conceptual ability. None of the

above investigators took into account the existence of sign language, as

a valid language; nor did they determine the deaf subjects' proficiency,

if any, in it. Furthermore, they did not report how much English the deaf

subjects had been taught, or how much of it they had absorbed. This is
a serious defect in these studies, and leads one to suspect that despite
their scholarship and research abilities, the researchers had fallen into
the very common misconception which confuses language with speech. Many
of the deaf are without intelligible oral speech, and, as was pointed out
in the previous chapter, many deaf children do not know English as hearing
persons know it. But it has yet to be demonstrated that any of the deaf
are truly "languageless".

There is, as was noted above, a segment of the deaf population that
has a native language from earliest childhood. This is the minority of
deaf children who are born to deaf parents, most of whom learn American
Sign Language from birth, at the same rate and in the same progression as
a hearing child learns her or his spoken language. ASL is the language
which has developed in the United States from the French Sign Language
which Thomas Gallaudet learned from the Abbé Sicard and brought back to
the United States one and one-half centuries ago. In the last century,
however, with the rise to precedence of the oral method of instruction,
ASL fell more and more into disrepute. The deaf continued to use it, but
like varieties of nonstandard English, it was felt to be childish and
incorrect. Like Haitian Creole, ASL was felt to have "no grammar", and
its use was prohibited in most schools for the deaf, even among the
students themselves. Like many creoles, ASL survived, but (unlike them)
not merely because of linguistic pride or nationalistic solidarity.
Just as ASL was maligned because of its modality--visual/gestural--it was
because of its modality that it survived; for a sign language is the only
kind of language that a profoundly deaf person can learn "naturally",

without real difficulty, as a hearing person learns spoken language(s).
And even if a deaf child is not taught a standard sign language (such as
ASL), he is inclined, by the nature of his handicap, to try to express
himself manually, gesturally, and to react to visual cues presented by
the faces and hands of the people around him. It is this author's
contention, which will now be elaborated upon, that even the deaf child
who knows no ASL, is not necessarily "languageless". If his intelligence
is anywhere in the normal range, he will find relations and patterns in
all things, and he will try to express these in some way, however idio-
syncratic. It is possibly this idiosyncratic and unstandardized form of
expression on the part of the deaf child which, when put into written
form, produces some of the "deviant" and "erroneous" English which his
teachers find so troublesome. These "deafisms" are often very similar
from child to child, and suggest that even the "idiosyncratic" language
of deaf children of hearing parents has a pattern to it, and may not be
quite so random or idiosyncratic after all. Let us consider the notion--
which no one has had the means or the opportunity to prove (if indeed it
is possible to prove)--that the normal human being, with or without
hearing, is programmed for language. It is possible that there are
neural connections that are set up in the brain to perceive relationships--
relationships between symbol and object, between action, actor and
object, a deep case system, perhaps, like that posited by Fillmore
(1968, 1970) (as a descriptive grammatical tool), but which are
independent of language as it is traditionally defined. There exists,
too, in the human brain, the ability to generalize--a Platonic deep
notion of "form"--which is also shared, to some extent, with other animals.

In man, this ability to symbolize and this mental "deep case" appear

to be translated into a linguistic form, verbal or nonverbal, auditory

or visual. And if there exists no "language", in the sense of a shared

code, into which this mental language program can be translated, the

human being or beings will probably invent a code--a conventional

language among the members of a group, ah idiosyncratic system for an

isolated individual. For although human experiences may differ, the

bases of language, the human ability to symbolize, to perceive relation-

ships, actions and objects, can be seen as essentially the same in all

human beings. The expression of these concepts and connections is

another matter. The profoundly deaf child of hearing parents, having

no "native" language to learn, will; apparently, unless constantly

thwarted and punished by those around him, devise a gesture language

to fit at least his earliest needs. (It is probable that most such

idiosyncratic gesture languages do not progress beyond an early develop-

mental stage, for lack of a community to share and augment them.)

Using this broadened conception of language, then, no deaf child, left

to his own devices, is languageless. (Stokoe (1960) even suggested

that gestural communicative patterns, out of which sign languages

developed, might have been the primary means of communication for

prehistoric man, with vocal interaction playing only a minor part.)

American Sign Language, the standard language of the United States

deaf community, has added complications of its own to the question of

whether or not the deaf are "language-absent". As was mentioned above,

ASL was for many years not thought to be a real language; it was felt

to have "no grammar". Fusfeld (1958) voiced the commonly-held impression,

not based upon any actual syntactic analysis, that "Often signs follow

in unconventional order, unheeding of the pattern a sentence takes in customary usage. Adjectives, adverbs, nouns and pronouns hold no set sequence" (p. 267).

2.2 American Sign Language

Possibly because of their unusual (visual/gestural) modality and their relatively small number of users, and almost certainly because of the pressure from Oralists and attempts to either wipe them out or at least pretend they did not exist, ASL and other sign languages received very little attention until fairly recently. The first formal linguistic analyses of ASL were carried out by Stokoe (Stokoe, 1960, 1971; Stokoe, Casterline and Croneberg, 1965), and by McCall (1965), who had to devise new descriptive tools and modify old ones to deal with the new modality. ASL gained even more legitimacy in the eyes of social scientists when it was used by the Gardners (1969) in teaching language to a chimpanzee named Washoe. This novel experiment, coupled with increased interest in linguistics and in the problems of disadvantaged children in the past decade, has helped to stimulate new research into ASL and other gestural languages, their syntactic and semantic structure.

The results of current investigations into the structure of sign language may help bring about a reconceptualization of the nature of language. The broadened concept of language set forth above (pp. 23-24) gains support, to a great extent, from the very existence of sign languages, as well as from the particular studies of sign language which will be described here.

Traditional definitions of language have made the phonological system a defining characteristic of all languages and the only legitimate

linguistic medium of communication (Bloomfield, 1933; Hockett, 1958;
Sapir, 1966; Weinreich, 1966; Lyons, 1968). Bloomfield specifically
dismissed the sign language of the deaf as "developments of ordinary
gestures", and declared that "any and all complicated or not immediately
intelligible gestures are based on the conventions of ordinary speech"
(p. 39). (But cf. Stokoe, 1960, on p. 24 of this paper, for precisely
the opposite view.) Sapir, and only he, in his wisdom acknowledged that
"As a matter of theory it is conceivable that something like a linguistic
structure could have been developed out of gesture or other forms of
bodily behavior" (p. 1); but, unfortunately, he never elaborated upon
this speculation. Weinreich set forth a definition of language that
could certainly be filled by sign language (his choice of the term "sign"
to represent a unit of linguistic meaning is rather provocative):
". . . a language is a repertory of signs, and . . . discourse involves
the use of these signs, seldom in isolation. The rules of permitted
sign combination (grammar) are formulated in terms of classes of signs
(grammatical classes). Languages contain signs of two kinds: every sign
is, in general, a designator or a formator" (p. 145). Strangely enough,
however, Weinreich specifically excluded, as non-language, any system
that does not employ vocal signtvehicles. On the basis alone of its
systematic use for communication by a segment of the human population,
sign language should be included in definitions of human language. But
there is even more compelling evidence of the legitimacy of sign language
as a real language, possessed of a full grammatical system as well as a
system that parallels phonology in spoken languages.

Recent analyses of sign language have demonstrated the existence of
both a rule-based syntactic system and a lexicon. McCall (1965) found

similar constructions repeated throughout her corpus of ASL, and claimed
that this grammatical regularity fulfills the requirement of structural
consistency that is a feature of true languages. Analyses by Stokoe (1971),
Fischer (1971), Battison (1971, 1972), and Frishberg and Gough (1973)
have further established and described grammatical regularities and
consistent semantic features in ASL.

2.3 "Phonology" of ASL

Stokoe (1960) discovered and described three kinds of components
which make up every sign in ASL--somewhat on the analogy of phonological
features: "dez", the hand shape or configuration in making the sign;
"sig", the movement or change in configuration of the hand or hands; and
"tab", the location on or near the body of the signer where the sign is
performed. To these three features Bellugi and Siple (1971) added one
more: the orientation of the hand within the "signing space"--palm up,
palm down, fingers pointed toward the left or the right, palm facing
toward the body or away from it. Any change in any of these parameters--
dez, sig, tab, or orientation--will result in a corresponding change in
the meaning of the sign. Two signs that differ with respect to only one
of these parameters are considered a "minimal pair". Stokoe listed
fifty-five different dez, sig, and tab symbols, and devised a fairly
simple notation for them for use in transcription. As in spoken languages,
there are "dialectal" variations in the "pronunciation" of various signs:
some signs that in one part of the country are performed with both hands
may be one-handed signs elsewhere. There are also regional (and possibly
social) variations in the tenseness or laxness of the hand(s) when
signing. This is a fruitful area for socio-linguistic research.

Bellugi and Siple (1971) devised a series of experiments to confirm the psychological validity of Stokoe's (and Bellugi's) sign classification parameters. Deaf subjects were presented a list of 150 signs, one per second. The subjects were then required to recall as many of the signs as possible, in one of two ways: one group signed the signs they recalled, and the other group wrote the English equivalents of the signs they recalled. A hearing control group, presented with an English word-list, in a parallel recall experiment, made formation errors in recalling the words--i.e., they confused the stimulus word with a word which differed with respect to one or two phonemes. The deaf subjects, similarly, made errors by incorrectly substituting one of the above-described classification parameters. As far as the "phonology" of ASL is concerned, then, its reality and psychological validity are certainly comparable to spoken languages.

2.4 ASL Syntax

In the area of syntax, however, there are a few very interesting ways in which ASL differs from spoken languages. Stokoe (1971) pointed out one aspect of ASL which, because it is dependent upon the visual modality, has no possible parallel in spoken languages: certain signs may be produced simultaneously. In spoken languages, morphemes and words must always be sequential. Another difference, which is not so obviously a result of the visual modality, was examined by Fischer (1971). In her study of reduplication processes in sign language, Fischer found that ASL tends to allow a great many more reduplications of almost any sign than are possible with any words in any spoken language. Signs may be repeated any number of times--four is not uncommon--without, necessarily, any

substantive changes in the meaning of the sign. Occasionally reduplica-
tion will signify plural in a noun-sign, but not always. Variation in
meaning, however, is dependent upon the speed of the reduplication, a
feature which Fischer has, not surprisingly, called [+Fast]. The
addition of rhythmic body movement to the [-Fast] feature results in
yet another syntactic/semantic feature, [+Boring]. And a feature
associated with fast reduplication is the suprasegmental feature of
horizontal movement [+Horiz.]. It should be noted at this point that
facial expression, while never used as a sign by itself, is necessary to
the "phonology" and to the syntax/semantics of ASL--in much the same way
that phonological stress is necessary to English morphology (or tone to
tone languages), and intonation to English sentence structure.

There are other differences between ASL and English, but these are
more comparable to the differences that exist between spoken languages.
Fant (1972) pointed out the absence in ASL (or "Ameslan", as he calls it)
of English-type inflections; the same sign means "sit", "sits", "sitting",
"sat", etc. As well, there is often no difference between a verb and its
corresponding noun. ASL has no passive voice and none of the grammatical
moods. As in a number of not-terribly-exotic languages, there is no
sign to signify the copula "be", but the sign for "true" is sometimes
used for "am", "is", "be", etc. Sign language has no articles, but in
certain situations "that" is signed before the sign for an object or
event. Prepositions which show some location or movement are signed,
but prepositions such as "by", "at", and "of", which have structural
roles in English grammar, are not signed. Fant has characterized the
syntax of ASL as generally resembling short, simple, declarative English
sentences, arranged in chronological order. Moores (1970c) commented on

the dearth of function words in ASL and suggested that this could cause difficulties for the deaf child in learning English.

One particular difference between ASL and English which is presently being studied is ASL's lack of tense or aspectual marking of a verb or activity sign. Rather than any verb inflection or auxiliary, ASL has only time indicators, which provide a time setting for the given situation or narration. Frishberg and Gough (1973) have described these time indicators in terms of directionality from the "time line"--a line that runs vertically from approximately mid-cheek on the signer. Forward from the time-line indicates futurity; backward from it indicates past time. Certain time words, such as week, month, day, year, etc., can be inflected for number and time (present, future, and past), so that one sign can express the concept "three weeks ago". Thus, although ASL may lack elements which appear to be essential in many spoken languages, it compensates in ways that take advantage of the visual modality: movement, direction, and depth perception. Anything that can be said in a spoken language can be expressed in signs.

Although recent studies have begun to demonstrate the "phonological" syntactic, and semantic consistencies and regularities in ASL, there are still those who question the "grammaticality" of sign languages. In a study of Israeli Sign Language (ISL), I. M. Schlesinger (1970) designed a series of problems to determine first whether ISL has a syntax, and, if it does, whether this syntax depends upon sign-order (as a parallel to word-order). The experimenters used a set of pictures which depicted the grammatical relations Agent, Object, and Indirect Object. Subjects were deaf adults from Haifa and Jerusalem, some of whom had been taught

Hebrew in school. The task required one subject to describe a picture
to another subject in ISL; the other subject then was to choose the
picture in his own pile which he thought was being described. Results
indicated that ISL does manifest some aspects of syntax, but apparently
has no sign-order mechanism to show the relations "agent of", "object of",
and "indirect object of". The verb, although often omitted, never
occurred initially, and the adjective always followed the noun. But
in the case of Agent, Object, and Indirect Object, all possible sequences
were used at least once. Sign-order was not consistent for the group as
a whole, nor for nine of the twenty subjects taken individually. As a
result, there was a great deal of misunderstanding between the partners
in the task. This study, taken at face value, casts doubt upon the
universality of deep semantic relationships and their underlying syntactic
regularities. It makes the "broadened concept" of language, which I set
forth earlier in this chapter, implausible, or at the very least suggests
that there is one exception to an otherwise universal rule. But looking
more closely at Schlesinger's experiment, certain defects in the study
itself come to light. Since one--and usually the main--purpose of language
is communication, and since there was a great deal of misunderstanding
between the partners in the signing task (i.e., a lack of communication),
we might reach the logical conclusion that the signers were not "'speaking
the same language". We know little about Schlesinger's deaf subjects.
And it is possible, given the relative youth of Israel itself, the diverse
origins of its population, and the amount of recent immigration from very
many countries, that the subjects in this study were indeed not using the
same sign language. There may not yet have been the opportunity for a

single homogeneous sign language to have established itself in Israel.
If such is the case, the inadequate communication between the subjects
is hardly surprising. Another possibility, which has been pointed out
by deaf persons who knew of the experiment, is that the signers were
handicapped by not being allowed to use all of sign language. As was
mentioned above, facial expression is an essential phonological and
syntactic component of sign languages. Signers also feel that body
movement and "setting the scene" are also essential to many kinds of
narration. In Schlesinger's experiment, the signer was required to sit
and sign--apparently with his hands only--over a low screen. (The
screen was there to prevent the signer's partner from seeing the picture
that the signer had chosen to describe.) Again, not enough was
explained about how the experiment was conducted, but if the signer
could not stand up, and take the various "roles" of Agent, Object, and
Indirect Object, using various locations around himself to indicate
grammatical relationships, ambiguity might well have resulted. As yet,
there has not been much formal investigation of such mechanisms in sign
language, but it is conceivable that in a visual/gestural language,
role-playing could have a grammatical function.

2.5 ASL Vocabulary

Just as the phonological shapes of most words in spoken languages
are arbitrary with reference to their meanings, the shapes of most signs
in ASL are arbitrary, and are based on conventional usage within the deaf
community. However, most signs were originally highly gesturally descriptive
(iconic) of the actions or items they represented (Frishberg, 1973,
unpublished). There are still many observable relationships between

signs and their referents. (There are, similarly, onomatopoeic words in
spoken languages.) Stokoe, Casterline, and Croneberg (1965) outlined the
kinds of observable relationships that can exist between a sign and its
referent:

(1) Pantonymic signs--the action represents itself.

(2) Imitative signs--one important feature of the whole action or
    object is singled out to represent the whole.

(3) Metonymic signs--a relatively unimportant or unexpected feature
    of the object or action is used to represent the whole.

(4) Indicative signs--the act of pointing toward the referent.

(5) Initial-dez sign--a sign whose hand configuration (dez) is its
    first letter (if fingerspelled in English) in the manual alphabet.

(6) Name signs--often idiosyncratic signs used to refer to individual
    persons.

Battison (1971) revised this description, using a binary feature
notation, [±metaphoric] and [±metonymic]. Utilizing this classification
system, the first four of the above descriptions of signs can be accounted
for neatly and economically.

2.6 English-language Learning

The purpose of the above descriptions of the "phonology", syntax and
vocabulary of sign language has been to demonstrate some of the complexities
of ASL as well as the differences and similarities between ASL and English,
and to describe some studies which have been undertaken to find the
grammatical regularities of ASL and other sign languages. The point of
all this is that sign language is a valid language, which any future
definitions of language should take into account. Furthermore, those

children--usually of deaf parents--who have learned ASL, or some other sign language not based directly on a spoken language, necessarily encounter English as a second (or foreign) language. As was suggested earlier in this chapter, deaf children of hearing parents, unless thwarted, appear to devise a gestural first language of their own. This is necessarily an idiosyncratic language, which may not have the opportunity (because of a lack of other speakers, the dearth of experience of the deaf child himself, or other reasons) of developing beyond an early stage in the complexity of its grammatical and semantic structures. Deaf children who know ASL learn English via their first, gestural, code, and encounter many difficulties. When deaf children who have not learned the standard sign language (ASL) encounter English at school, they must map a complex (English) code onto their restricted one. Their difficulties in learning English and the number of errors they make can be expected to be proportionately greater than those of the deaf children who know a standard sign language.

Deaf children encounter the same sorts of difficulties as native speakers of foreign languages do when they first encounter English. In addition, there is the problem caused by the difference in modality between any sign or gesture language and English, and this compounds the difficulties. Any strange and unnatural teaching methods which may be in fashion at a given school for the deaf also cause problems. It is no wonder that deaf children perform as badly as they do in English and related areas.

2.7 English as a Foreign Language

To test the above hypothesis, that deaf children have learned English

as a foreign or second language, Charrow and Fletcher (1973; 1974, in press) administered the TOEFL (Test of English as a Foreign Language) to deaf high school students. Half (13) of the subjects were deaf children of deaf parents, who had learned some form of sign language or ASL at an early age, and half the subjects were deaf children of hearing parents, who had learned Signed English, much later, at school. The experimenters investigated the following three hypotheses:

(1) Since deaf children of deaf parents have learned ASL early, as a first language, and as a standard language shared by other users, they should outperform deaf children of hearing parents on any test involving language skills, and particularly on a test of English as a second language.

(2) If deaf children of deaf parents learn English as a second language, their item-by-item performance on the TOEFL should resemble the performance of foreign students who have taken the test more closely, than does the performance of deaf children of hearing parents. (The first language, if any, of deaf children of hearing parents is restricted and idiosyncratic, and their English competence, based upon their idiosyncratic language, is consequently expected to be restricted.)

(3) Performances by deaf children of deaf parents on a test of English as a second language and on a standard test of English skills (such as the SAT) should be less related than performances by deaf children of hearing parents on the two tests. (One would expect this result, because the deaf children of hearing parents would not have learned English through the medium of ASL. Rather, English would most likely be their first complete, unrestricted and shared language. There

should thus be little "interference" from their first (idiosyncratic) language, a▓▓▓ probably was an uncomplex one at the syntactic level of early child language, and was not retained after its initial use as a makeshift, stopgap means of communication.)

Results on three of the four written subtests of the TOEFL supported all three of the above hypotheses. (See Tables 1, 2, and 3, pp. 37-39.) On the fourth subtest, Reading Comprehension, both groups of deaf subjects performed equally poorly, which suggests that more was involved in this subtest than English comprehension. (Given the poor reading achievement scores of deaf students, the results in this subtest are not surprising.) From these results, then, it appears that deaf children of deaf parents, who have learned ASL as a first language, perform better in tests of English than deaf children of hearing parents. Deaf children of deaf parents appear to have acquired English as a second language, more so than deaf children of hearing parents (who perform more poorly, and more idiosyncratically, in English). (See Table 4, p. 40.) And neither group can use English with the facility or correctness of a native speaker. The nonstandard form of English that deaf persons do use is the object of investigation in this dissertation.

TABLE 1

Means, Standard Deviations, and T for SAT Grade Placement Scores

of 13 HP and 13 DP Students on the Paragraph

Meaning (PM) and Language (L) Subtests

	Group	Mean	S.D.	T-score
Paragraph Meaning (PM)	HP	4.92	1.07	-3.64**
	DP	7.04	1.80	
Language (L)	HP	6.65	2.49	-2.47*
	DP	8.64	1.48	

*$p < .05$; df = 24.

**$p < .01$; df = 24.

TABLE 2

Intercorrelations Between TOEFL and SAT Subscores for the 13 HP and the 13 DP Subjects

	Group	Paragraph Meaning (PM)	Language (L)
English Structure (ES)	HP	.81**	.79**
	DP	.84**	.30
Vocabulary (V)	HP	.63*	.67*
	DP	.84**	.30
Reading Comprehension (RC)	HP	.00	.18
	DP	.58*	.26
Writing Ability (WA)	HP	.51	.69**
	DP	.64*	.45
Total (T)	HP	.74**	.85**
	DP	.93**	.48

*Significant $\underline{F}$ Test for regression (p < .05; df = 1, 11)

**Significant $\underline{F}$ Test for regression (p < .01; df = 1, 11)

TABLE 3

Point Biserial Correlations for Parentage (DP = 0, HP = 1)

With TOEFL and SAT Scores, Age, IQ, and Hearing Loss

Calculated for All 26 Deaf Subjects

	Parentage
English Structure (ES)	-.76**
Vocabulary (V)	-.64**
Reading Comprehension (RC)	-.39*
Writing Ability	-.59**
Total TOEFL (T)	-.73**
Paragraph Meaning (PM)	-.60**
Language (L)	-.45*
Sex	-.08
Age	.45*
IQ	-.03
Hearing Loss (HL)	.00

*Significant F Test for regression (p < .05; df = 1, 24)

**Significant F Test for regression (p < .01; df = 1, 24)

TABLE 4

Means, Standard Deviations, and T for TOEFL Scores of 13 HP,

13 DP and 113,975 Foreign Students (S)

	Group	Mean	S.D.	T Score
English Structure (ES)	HP	28.15	3.69	5.74*
	DP	39.85	6.36	
	S[a]	49.00	8.00	
Vocabulary (V)	HP	34.92	5.11	4.05*
	DP	43.85	6.09	
	S	48.00	11.00	
Reading Comprehension (RC)	HP	34.15	2.12	-.59
	DP	30.31	5.02	
	S	48.00	8.00	
Writing Ability (WA)	HP	31.00	3.39	3.62*
	DP	38.54	6.72	
	S	48.00	8.00	
Total Score (T)	HP	128.23	10.69	5.17*
	DP	159.54	19.04	
	S[b]	--	--	

[a] Means and standard deviations for foreign students were taken from the TOEFL manual (Test of English, 1970, p. 6).

[b] Distribution of total scores for foreign students across the four subtests was not available.

*p < .01; df = 24.

CHAPTER THREE

3.1 Deaf English as a Pidginized Variety of English

Most educators of the deaf and researchers into deaf language
problems are aware that the congenitally profoundly deaf do not learn
English as native speakers do. For obvious reasons, the spoken English
of the deaf never reaches the proficiency of the native speaker, but
even their written English typically shows a range of errors in syntax
and word usage--"deafisms" (Eachus, 1971). For example, in ongoing
studies of such errors (Wilbur, Quigley and Montanelli, 1973, unpub-
lished), preliminary findings have shown that deaf subjects have
particular difficulty with pronouns, in such constructions as "He
picked up the ball and threw [it]" (where the it is omitted), and with
recognition of referents in relative pronoun constructions, among other
things. Our own findings from the TOEFL (cf. Charrow and Fletcher,
1973, above) showed that deaf subjects made fairly consistent errors
with relative pronouns, determiners, prepositions, compound tenses,
inflected tenses, tense agreement, and modals. In spite of the fact that
most of our subjects had been in school, and learning English, for an
average of eleven years, their performance was significantly worse than
that of foreign college entrants of comparable age. By the age at which
these deaf subjects were tested ($\bar{X}$ = 17.3 years; S.D. = 1.1 years), most
were no longer learning anything new in English. At that point, their
teachers were trying to erase grammatical errors and "deafisms" which
appeared to have taken solid root and frozen themselves into the students'
own concepts of "English".

The commonality of errors on the TOEFL, as well as the very common

errors in the English productions of other deaf students, attested to by many teachers of the deaf, led this writer to the conclusion that perhaps deaf persons had acquired and were using their own variety of English. Since so many of their errors seemed to be shared, it was worth investigating whether they were indeed shared, and to what extent. If shared grammatical constructions and word (mis-)usages could be found among a fair number of deaf persons, then a case could be made for the existence of a non-standard variety of English, used only by the deaf--a "Deaf English". It appeared to me that once the average deaf student has learned enough English to get most facts and ideas across, to his own satisfaction, and to understand the simple written communications of other deaf students, these grammatical and lexical forms become "frozen", and very little further learning of Standard English takes place. This probably occurs in early adolescence, at about junior high-school age, since at that time, according to Lenneberg (1967), language-learning tapers off. Certainly, for the deaf, at that age there is a general levelling-off of the rate of improvement in reading and writing ability and verbal facility (Myklebust, 1964). Except in rare cases, the English that the deaf know at age fifteen or sixteen is the English they continue to use throughout their lives.

3.2 <u>Structural Differences and Semantic Differences</u>

   If there is a nonstandard variety of English--a "Deaf English"--used by deaf persons in written communications, what sorts of generalizations can be made about it? For instance, is it safe to say that such a dialect would be semantically different from Standard English? Syntactically different? Lexically different? The questions are difficult to answer.

Certainly, there ought to be syntactic differences, as these are the "deviations" that catch the attention of educators of the deaf. Whether such surface structure differences reflect differences in deeper structure, and ultimately in the semantic structure of the dialect, remains to be seen. It is reasonable to assume, however, that any syntactic or lexical change might indeed involve a corresponding semantic change, although this is not a necessary condition. It would not, however, be reasonable to assume, simply because the deaf have made over Standard English input into a nonstandard dialect, that their cognitive processes are different from those of hearing persons, or that they "perceive the world different-ently", in the old Whorfian sense. The failure to master a given syntactic construction may simply be a result of insufficient exposure to it, or a misunderstanding of its function. Menyuk (1969), in explaining the "errors" that very young hearing children make in using the pronoun subclass, says essentially the same thing: "We do not think that the usual difficulty lies in differentiating oneself from the rest of the world or conceptually differentiating gender and number as has often been postulated, but, rather, primarily in the obscure syntactic role this subclass plays in the sentence" (p. 53).

An analysis of the sorts of changes that deaf persons make in producing "Deaf English" could provide valuable information to linguists on those aspects of English which are most redundant or most disposable when raw communication is at stake. It could also add to our knowledge of which aspects of English are easier and which are more difficult to learn and to retain. "Deaf English" may be an example of pidginization, as is suggested in the next section. If this is the case, a study of

its development, and an analysis of its forms, could provide insight
into the pidginization process. Even if it is discovered that not all
the nonstandard constructions in various deaf persons' English are
systematic or shared with other deaf persons, we should still be able
to gain insight into the difficulties in learning Standard English, and
the likelihood that certain items or constructions in Standard English
are less informative, more difficult to retain, or more redundant than
others.

3.3 Pidginization and Creolization

This section deals with the possibility that "Deaf English" is an
example of pidginization, if not an actual pidgin. The section begins
with a general description and discussion of pidgins and pidginization,
and goes on to define more specific characteristics of pidgins, which
may also occur in a "Deaf English".

Pidginization is a process of linguistic reduction, which may or
may not result in the formation of a true "pidgin". As yet, there is no
really comprehensive definition of a pidgin. However, a pidgin can be
described as a fairly stable pidginized form of communication between
languages. An example of a pidgin is Neo-Melanesian, which developed
in Melanesia around a "superstratum" of English, with one or more of
the "native" languages as its substratum.

When a pidgin acquires native speakers, the process is known as
"creolization". The pidgin becomes elaborated, its vocabulary expands,
and it develops into a creole. If a creole is in contact with the
standard language (such as Jamaican Creole--an English-based creole--in
contact with Standard English), it tends to approximate toward the

standard. This process is known as "decreolization".

In general, the purpose of the pidgin is fairly rudimentary communication, usually confined to a few areas, such as trade. De Camp (1971) states the traditional view of pidgins as follows: "Each pidgin or creole has been traditionally classed as a deviant dialect of a standard language, usually European, with English, French, Portuguese, and Dutch the most frequent" (p. 15). He goes on, however, to present the more modern view that "[T]hese are genuine languages in their own right, not just macaronic blends or interlingual corruptions of standard languages".

In his discussion of salient versus substantive pidginization, Samarin (1971) points out that many of the superficial aspects of pidgins may not be the defining characteristics of a pidgin. For example, he says, "[R]eduplication is therefore a salient feature of pidgins, not a substantive one" (p. 119). Samarin notes that as yet there is no agreement on what constitutes substantive pidginization, but he does feel that all linguists would agree that "simplification" is a substantive feature of pidgins.

Hymes (1971) points out that simplification alone is not enough of a criterion for labelling a given dialect a pidgin; otherwise even baby-talk would fit the definition of pidgin. He states that the two other features traditionally thought to imply pidginization, admixture and restricted inter-group use, are, taken singly, even less reliable indicators of pidginization than simplification. And even if all three features are present, "the relevant meaning of each of the three must be specified-- how much, and what kind, of each is to count?" (p. 81). Moreover, if

one of the three features is missing, this does not necessarily mean that

the result is not an example of pidginization. Throughout, Hymes makes

a distinction between pidgins and pidginization. He summarizes the

difference as follows:

> Since pidginization is a process more general than
> crystallization of pidgins, and since pidgins, once
> formed, may be elaborated, in content and use, while
> remaining pidgins, the characteristics found in develop-
> ment to, and of, a pidgin admit of degrees. Indeed,
> pidgins and pidginization are instances par excellence
> of variable adaptation of means to an audience and
> situation.

And,

> . . . whereas imperfect learning of a second language
> is set aside by Whinnom, for Samaria, it, memory loss
> of one's language, field work jargons, argots, restricted
> codes, (Bernstein) and the like are all of interest,
> inasmuch as they are instances, not of pidgins necessarily,
> but of a process of pidginization, which he defines as any
> consistent reduction of the functioning of a language
> both in its grammar and in its use. (p. 69)

What characteristics would "Deaf English" have to possess, in order

to be classed as a pidgin? The following paragraphs define a number of

common features of pidgins.

Hall (1966) provides the classic description of how pidgins originate;

"A pidgin normally owes its origin to relatively casual, short-term

contacts between groups that do not have a language in common" (p. 127).

De Camp (1971), elaborating upon this theme, sets forth a definition

of pidgins that most linguists would probably accept:

> A pidgin is a contact vernacular, normally not the native
> language of any of its speakers. It is used in trading or
> in any situation requiring communication between persons
> who do not speak each other's native languages. It is
> characterized by a limited vocabulary, an elimination of
> many grammatical devices such as number and gender, and a
> drastic reduction of redundant features. This reduction

has often been called simplification, but it is now con-
sidered debatable whether the less redundant pidgin is
simpler or more complex than the standard language. (p. 15)

To this, we may add Hymes' (1971) specification:

By definition, a pidginization situation principally
involves adults. (Were the participants children, we
would call it incipient creolization.) The process does
not have the maturational basis of childhood acquisition,
but is learning and adaptation, a _selective_ acceptance
of lexicon and grammar, so far as any one source is
concerned, in a context of limited opportunity, limited
need, and, as adults, of more limited ability. From the
standpoint of the community or group, the process is a
visible one of sharing in the _ad hoc_ adaptation and
creation of a novel means of speech. (p. 81)

Samarin (1971) defines a sociolinguistic feature of pidgins:

The pidgin . . . is not normal, and when a person is speaking
a pidgin he is limited to the use of a code with but one
level or style or key or register. . . . In other words,
he does not have the rich variety of language styles from
which to choose whatever is appropriate to the context,
situation, or person (or people) to whom he is talking.
. . . In summary, the pidgin-speaking community is not
normal from a sociolinguistic point of view. Neither is
the language normal. A pidgin is a language, but a different
kind of language. (p. 122)

Labov (1971) points out another surface feature of pidgins--the

apparent dearth of systematicity in both phonology and syntax: "Pidgins

thus seem to be unsystematic in both senses noted: the absence of well-

defined norms and the high degree of individual variation" (p. 454).

3.4 _Characteristics of Deaf English_

None of the above precludes the possibility that Deaf English is an

English-based pidgin. Beginning with Hall's (1966) description of the

origin of pidgins, cited above, I will demonstrate how each of the above

descriptions or definitions can be applied to the nonstandard (usually

written) English of the profoundly deaf:

(1) No language in common

Certainly there exists no common first language between deaf
children on the one hand and their hearing parents (and, very often,
their non-signing oralist teachers) on the other; and deaf persons who
are brought up using some form of sign language, at first have no
language in common with most hearing persons, who have not learned
a sign language. In the more enlightened schools for the deaf, signing
is used by the teachers along with the oral modes of instruction, but,
unlike native signers, who use ASL, the teachers use Signed English,
which usually is more like English than like ASL in its syntax and
lexicon. (It is more like ASL in "phonology" and "expression" features.)[1]
As there is no common language between the deaf students, on the one
hand, and the teachers on the other, a compromise must take place. Thus,
when the need for a written language arises, the superstratum must be
English (since English has a written form and ASL does not). But as the
deaf students do not know Standard English, the result is <u>not</u> Standard
English. It appears that students absorb imperfectly the oral, manual
and written English they are taught, misinterpret the signed, finger-
spelled, spoken and written English of their teachers, and add to this
their varying degrees of proficiency in ASL (if any). The result is a
makeshift variety of English--a "Deaf English".

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[1] It has been suggested (Stokoe, 1972) that the deaf students process
this manual English as though it were ASL, which sometimes results in mis-
understandings of the teacher's message, or misinterpretations of the
original intent. For example, deaf students, regardless of parentage, or,
for that matter, of method of instruction, find English passive constructions
very difficult to understand, decode, and use correctly. Thus, if a
passive sentence were to be used by a teacher in Signed English, the
students might understand it (incorrectly) as an active sentence. Teacher
and student would be using the same communication modality--manual/visual--
but they still would not be speaking the same language.

(2) Casual and short-term contact

The average deaf student receives a minimum of eleven years' schooling, with very great emphasis upon English language and speech skills. How, then, can one suggest that contacts with English are "casual" or "short-term"? The length of the deaf child's education in years is immaterial. Deafness imposes severe limitations on oral and written language learning. As we have shown above (Chapter One, Sections 1.4 and 1.5), it takes the deaf child far longer to master even the rudiments of English syntax than a hearing child. Deaf students are still working on the structure of simple sentences well into high school. And by that time, according to Lenneberg (1967), the human brain is not usually capable of very much more language-learning. The amount of effective English-language learning time for the deaf child is thus more like six years. Furthermore, the number of hours the deaf child spends in contact with English are a tiny fraction of what the hearing child is exposed to. The hearing child is bombarded with English ten or fifteen hours a day from birth; the deaf child--given teacher time-limitations and depending on class size--receives perhaps two full hours of English exposure a day, five days a week, from age five. Furthermore, the English that the deaf child receives consists of the few (perhaps 25 to 50 percent) cues readable from the lips, in the simplest possible English (often only single words). In addition, if he is fortunate, he receives whatever English is taught via Signed English, and fingerspelled English, in the relatively few schools that employ these methods. It must be remembered, once again, that even Signed English as used by teachers does not provide the same grammatical and semantic information to the deaf as spoken

English does to the hearing: Signed English is English "transliterated" into a manual mode, and most forms of it do not adequately deal with English verb inflections, tenses, modals, prepositions and determiners. They are tedious to fingerspell, and are sometimes forgotten by the teachers and often overlooked by the students. In an essentially <u>spoken</u> language, such as English, learning time and exposure time must be prolonged for the deaf child, and the years of exposure add up to a few months at most. Thus "short-term" where hearing persons in the usual pidgin situation are concerned, may well be used to describe the amount of real contact that the deaf child has had with Standard English.

(3) Reduction

De Camp's (1971) general description of pidgins, cited above, also fits what we know of Deaf English. Deaf adolescents and adults usually have limited English vocabulary--new lexical acquisitions tend to be misused at first, and then forgotten. An overview of the grammar of the English which the deaf use shows many instances of elimination of number, gender, tense markers, and other essentially redundant features.

(4) Adult users

Hymes' (1971) description of pidgin users as adults also corresponds to the Deaf English situation. Although the Deaf English users that I have described have been adolescents, for linguistic purposes adolescents <u>are</u> adults; it is at this age that language-learning abilities appear to begin to "atrophy" (cf. Lenneberg, 1967). In the case of deaf adolescents, English usage has already "frozen" or "crystallized" by this age; it is characterized neither by the short sentences and neat overgeneralizations of early child language, nor by the greater grammatical sophistication

and competency of later stages of child language. The English of the deaf adolescent is, in most cases, the English he will have for the rest of his life--unless it deteriorates. It appears to be, indeed, in Hymes' words a "selecti   ceptance" of English lexicon and grammar, most certainly "in a context of limited opportunity, limited need, and . . . more limited ability".

(5) "Not normal"

Samarin's (1971) comment, that the pidgin-speaking community cannot be considered normal, also applies to the community of Deaf English users. The deaf are not in a normal situation; they are by virtue of their handicap "not normal". Furthermore, the English they use is not adaptable to all situations--it is, generally speaking, a written language, for use in written communication. Both because of its written modality and because of its nature--a nonstandard language, restricted in form--it cannot express all those shades of meaning and social functions that a standard, spoken language would. Deaf English lacks not only redundancy, but also registers and nuances.

(6) "Unsystematic"

As for Labov's (1971) remark concerning the apparent unsystematicity of pidgins, we ourselves remarked above that Deaf English may not be wholly systematic in its non-standard constructions, and that there may be a fair amount of individual variation (for whatever reason), and possibly a poorly-defined line between it and Standard English.

There are other possible characteristics of pidgins and of pidginization, to which we can compare what we know of Deaf English. Hall (1966) has added: "[F]rom the structural point of view, a pidgin represents

the very first stage of language learning, with the development of
linguistic structure and lexicon arrested at this level, except-for
whatever analogical extension is made using the resources of the pidgin
itself". And furthermore, "the crystallization of structure at this
first stage is due essentially to the slightness of contact involved"
(p. 127). Whether this reason for the particular kind of simplification
involved in pidginization fits the Deaf English situation remains to be
discovered. Not enough is yet known about "deafisms" and "deviant"
grammatical structures in the English of deaf persons to be able to say
whether certain basic (English) grammatical rules are consistently applied,
while higher-level rules are omitted or applied inconsistently, resulting
in constructions that appear to be "arrested developments" of English
structure. From the little we do know about deafisms (cf. Quigley,
Wilbur and Montanelli, 1973; Quigley, Montanelli and Wilbur, 1973;
Quigley, Smith and Wilbur, 1974), it is certainly possible that they fit
Hall's description of the pidginization process. The experiment described
in the next chapter was designed to shed more light on this and other
aspects of the Deaf English problem.

Objections might be raised to the inclusion of Deaf English among
either English nonstandard dialects or English-based pidgins, if Deaf
English were found to have very many idiosyncratic grammatical construc-
tions and lexical usages among its users. However, any such idicsyn-
cracies could be explained as results of deafness, which by its nature
does not allow for much feedback, correction, or widespread adoption of
less-used, more esoteric grammatical constructions.[2] Moreover, the
"discovery" of ASL and other grammatically consistent sign languages by

linguists has necessitated a re-definition and a re-thinking of the nature and form of human language. Since the case of the deaf is necessarily different from that of hearing persons, in a pidgin situation as in a first-language situation, it may be necessary to broaden the definition of "pidgin" to include th ritten, crystallized English of the deaf. The very nature of deafness and the limitations it imposes upon language learning, language spread, and oral and written communication, should be taken into consideration as possible conditions for the creation of a pidgin.

There is another possible objection to the inclusion of Deaf English among pidgins, based upon the description of the pidginization process in Voegelin and Voegelin (1964). Here a pidgin is described as a result of a non-general tendency in language contact: language A meets language B and a new language, C--a simplified agglomerate of various grammatical, lexical and phonological features of A and B--a pidgin--is formed. But "the only safe criterion of a mixed language (Pidgin Creole) is that the unmixed languages A and B continue to be spoken beside the mixed language C (the Pidgin Creole)" (p. 3).

Deaf English does not always easily fit this description. For one thing, there may not be two source languages in the strict sense of the term, since, in some cases, ASL--or some other standard variety of sign

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[2]It should be noted that the deaf receive very little feedback or reinforcement from written materials, since the majority of deaf adults cannot read above a grade 5 level. Deaf persons are thus not exposed to complex grammatical constructions and advanced vocabulary. Furthermore, their poor reading comprehension discourages most deaf persons from reading very much, and so their reading and English-language skills do not generally improve in adulthood.

language--is unknown to the deaf student. As was hypothesized in the previous chapter, the deaf student (child of hearing parents) may have no shared linguistic code--no "language"--except an idiosyncratic set of gestures. Often the makeshift Deaf English exists alone, a variant of English imperfectly learned and "frozen" into its nonstandard form. Moreover, the Standard English-speaking "prestige" group--the teachers and parents--do not approve of or use the nonstandard variety. Unlike European traders or colonial administrators, Standard English speakers make no attempt to communicate in Deaf English. Although written Deaf English is sometimes accepted by the Standard English speakers from the deaf students, more often attempts are made to correct Deaf English--to make it conform to the standard. Nor is there any real desire among the deaf themselves to perpetuate Deaf English; it is not a matter of linguistic or cultural pride among them. Deaf English may merely be a convenient stopping point for them in their arduous task of learning English. Nevertheless, this situation does not necessarily prevent Deaf English from being classed as a pidgin.

Even if Deaf English is found to be more unstable and to have more idiosyncracies in its grammatical constructions and lexical items than most spoken pidgins, even if some Standard English features are included with no apparent code-switching rules, and even if Deaf English is found to change with every school generation, it could fit Labov's (1971), DeCamp's (1961), or Reinecke's (1964) above descriptions of processes of pidginization, and certain descriptions of decreolization. Just as it may be the case that many users of Deaf English mix standard constructions with their nonstandard variety, or alternate between the two, the

same phenomenon occurs in pidgin and creole usage. DeCamp explains
that Jamaican Creole covers the whole range of English usage from the
most backward pidgin to Standard English.

> [N]early all speakers of English in Jamaica could be
> arranged in a sort of linguistic continuum, ranging from
> the speech of the most backward peasant or laborer all the
> way to that of the well-educated urban professional.
> Each speaker represents not a single point but a span
> of this continuum, for he is usually able to adjust his
> speech upward or downward for some distance on it. (p. 82)

But as Labov and others have shown, this variation may even occur __within__
a single sentence, and may not have any apparent socio-linguistic
conditioning. Mary Hope Lee (personal communication, 1973) has found
many instances of this within-sentence variation in West African Pidgin.
Furthermore, the speaker himself may not be at all aware of the differ-
ences in the types of rules he is using when code-switching, or of the
fact that he is not speaking "pure" Standard English (Rebecca Agheyisi,
personal communication, 1971). A similar observation is made in
Creole Language Studies, Number II (1961):

> A questioner mentioned the fact that in her teaching
> experience in Sierra Leone she had found it much easier
> to teach (in English) those children whose native
> language was not Krio. Teaching now in a Jamaican
> school she felt that the difficulty both in Sierra
> Leone and Jamaica was that the children did not realize
> that Creole (or Krio) __was__ a different language system
> from Standard English; the confused the two. (pp. 119-120)

3.5 Pidgin Signed English

There is still another way of viewing the question of whether Deaf
English can be a pidgin. Woodward (1973) discusses a sign language pidgin--
Pidgin Signed English (PSE)--and produces evidence for the existence of
a PSE continuum, with American Sign Language (ASL) at one end and

Standard English (signed and fingerspelled) at the other. Signers often vary their sign language usage to different degrees by incorporating different ratios of features from each source language, PSE is thus a variable sign language, with structures from ASL, usually in English word-order, and employing some of the inflections of English at various times, with or without sociolinguistic justification for this variation. Some signers use some inflections or tense markers in this variable way; other signers use others. Woodward presents a convincing case that the resulting sign language is a pidgin.

It appears from Woodward's description of PSE that Deaf English is its written analog, but is closer to Standard English in the continuum. Deaf English appears to be characterized by the same type of variation as PSE. Standard English rules are applied optionally and certain features of ASL appear to be used in Deaf English--although, obviously, the purely sign (gestural) aspects of ASL are not present in the written form, and more English-type features are present. If one were to translate PSE into the written mode, it is very probable that the result would be very much like Deaf English as I have characterized it.

All this is further--if indirect--support for the status of Deaf English as an English-based pidgin.

3.6 The Analogy with Black English

It is only recently that Negro Nonstandard English (NNE) has achieved the status of a dialect in the United States--most commonly called "Black English". Before that, it had been felt (as it occasionally still is) that many Blacks spoke English without regard to proper pronunciation and correct grammar. Many Black persons were felt to be "linguistically

deficient" and culturally and linguistically deprived. It was thought
that they were not as verbal as whites (but cf. Baratz, 1969; Labov, 1969),
and even that they supplemented their scanty and error-filled English
with meaningless noises--grunts--and gestures. Whole early childhood
development and Head Start programs were based upon these premises.
Closer observation and carefully controlled experiments by such socio-
linguists as Labov (1969), Baratz (1969), and Stewart (1969), have
disproved assumptions that Blacks have a linguistic deficit. Careful
studies of the language produced by Black children and adults in various
parts of the country have turned up phonemic, grammatical, and lexical
regularities which lend support to the existence of the fairly regular,
nonstandard dialect of English which has come to be called Black English.

There appear to be some similarities between the situation of Blacks
and the situation of the deaf with regard to language. Both groups are
looked upon as underprivileged, and linguistically and culturally
deprived--although for different reasons. Both groups have greater
than usual difficulties in school (some of which are seemingly a result
of their language problems). And both groups are felt to suffer from
early "environmental deprivation"--the Black child, because of the poverty
and the lack of education of those around him; the deaf child, because of
the communicative limitations imposed upon him by his handicap.

Obviously, there are difficulties in drawing a parallel between
Black English and Deaf English. For one thing, the deaf rarely communicate
orally with each other, or even with hearing persons--certainly not as
much as any hearing people, black or white, speak to each other. Even if
Deaf English is considered in its written form, it would still be propor-
tionately less prevalent than Black English, since many deaf people,

because of their difficulties in learning English, have difficulty (and
feel ashamed) writing in it. Some deaf persons have very great difficulty
learning to read and write, with the result that they emerge from the
schools as functional illiterates. And further, for those who do learn
to read and write, written Deaf English cannot truly be considered a
primary mode of communication, comparable to spoken Black English. None-
theless, although written Deaf English is certainly not used as much as
spoken Black English, and is certainly not as spontaneous or as productive
of new forms, for many situations it is comparable to Black English. In
communicating with hearing persons--very often their own parents and
family--the deaf may have to rely upon written Deaf English. And certainly
in communicating with each other at a distance, whether by teletype or
by letter, the deaf must use the writing mode, much as hearing persons
would use a telephone. (Since, in any case, the deaf would be likely to
produce more, and more coherent, written communications than oral ones,
written Deaf English appears to be a reasonable form of language production
to study.)

There are other differences between the Black child and the deaf
child--particularly since the deaf child has a real, physical handicap,
and really isn't receiving sufficient linguistic (verbal) input, feedback
and reinforcement. Nonetheless, particularly for those deaf children who
have ASL as a first language, or Signed English as a first dialect of
English), the analogy between Black and Deaf nonstandard language groups
has a certain validity. The substantiated existence of Black English as
a nonstandard dialect suggests the possibility that a parallel nonstandard
dialect of English exists among the deaf.

The possible existence of a "Deaf English", however, raises some problems. If it is found that the same forms and features are used consistently and frequently by a very great number of deaf persons, then the commonality of usage that one expects from a dialect exists, and the theory (the existence of Deaf English) is automatically substantiated. If, however--what is more likely--nonstandard constructions and lexical items are used by only some of the population some of the time, alternating with the Standard English forms, does than mean there is no "Deaf English"? If, furthermore, some nonstandard constructions are used by some deaf persons, and others by other deaf persons, and still other constructions appear to be idiosyncratic, does than mean that there is no such entity as Deaf English? If there is no Deaf English, how can we account for deviances from Standard English that keep cropping up, consistently, with a certain--as yet undetermined--probability, in every deaf population (e.g., tense and article omission)? Where, in short, do we draw the line between a nonstandard dialect and erroneous usage? Can we continue to impose the stigmas of "erroneous usage" and "deafisms" upon a whole group of people, or can we learn to accept and understand their various deviations from Standard English, until some more effective way is found of teaching them Standard English?

Not all of these questions are impossible to answer here. To begin with, when considering the possibility that not all the "deafisms" and nonstandard constructions in one deaf person's English may be found in another deaf person's English, it should be pointed out that even dialects--and particularly such widespread nonstandard dialects as Black English--are not totally consistent in all their constructions. That is to say that rather than total agreement among all the speakers in all

aspects of the dialect, there are Black English features that appear

fairly often in the speech of most of the speakers (Labov, 1971, p. 468).

The sociolinguist thus can predict fairly accurately how often certain

nonstandard features can be expected to occur relative to Standard English

features in a sample of utterances produced by Black English speakers.

At the same time, he may not be able to predict accurately the ratio of

occurrence of one nonstandard feature to its corresponding standard

feature in the utterances of one Black English speaker. Furthermore,

dialects such as Black English (which is thought to have originally been

a creole) now show features of Standard English in those items that vary.

This may be due to dialect mixture, free variation or, as Labov (1971)

has suggested, optional rules with variable constraints upon their

application. There exists a great deal of variation within Black English,

indeed within the speech of one speaker of Black English, and even

within one sentence uttered by one speaker of Black English (cf. Labov,

p. 462). Nonetheless, it is agreed among linguists that Black English is

a dialect of English.[3] The variation that is found may be due to the

existence of a dialectal continuum between "pure" Standard English on

the one hand and "pure" Black English on the other. It might also be a

result of variation within Black English itself--i.e., optional rules

which may be applied under certain conditions (although very often the

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[3]It should be noted that there are several degrees of variation--
conditioned and "free"--within all sorts of dialects of all languages.
This variation is rarely reported, often because the linguist prefers to
focus upon the invariant aspects of language; more often, possibly,
because the investigator has collected his data from only one informant
and cannot say which items and constructions are common and which are
idiosyncratic. Thus, anything that has been said above concerning
variation in Black English could probably be said about dialects in
general, to a greater or a lesser extent, depending upon the dialect.

evidence for their application in a given utterance may not be apparent, hence "free" variation) and which may reflect an earlier stage of the dialect.

Thus, in the case of Deaf English, to the extent that the usages of nonstandard features are widely shared, we are not dealing with idiosyncratic erroneous English. If it can be demonstrated that a certain percentage of the experimental population uses various nonstandard constructions ("deafism") a certain percentage of the time--even in free variation with the corresponding standard constructions--then there is evidence for the existence of a nonstandard Deaf English in that population. The very deviances from Standard English I referred to above, which keep cropping up in every deaf population, are tantalizing suggestions of dialectal regularity, and will be dealt with in the experiment in Chapter 4.

It has been demonstrated fairly convincingly that Black English was originally a creole, and is presently in a post-creole stage, moving in the direction of Standard English. Creoles have been described as "elaborated pidgins"--that is, the pidgin has been made grammatically and syntactically more complex in order to deal with more complex ideas and situations. It can certainly be argued that the syntax and grammar of Black English is just as complex as that of Standard English, and that one can use it to express any idea, without recourse to the circumlocutions that are necessitated by the generally limited grammars of pidgins.

It is possible that when more thorough analyses of Deaf English have been conducted, we may not find a grammatical comple 'ty equivalent to that of either Black English or Standard English, nor may we find the

same capacity for expressing complex concept. Such things as the omissions of plural markers, tense markers, determiners and some prepositions may be evidence of interference from sign language rather than dialectal regularity. Deaf English simply may not have the capacity to express complex ideas in succinct ways, and there may not be very much regularity or commonality of usage of its more complex constructions. But in the event that we find only "simplification" of Standard English grammar, we have still found regularity. Furthermore, we can still provide evidence that Deaf English may be an English-based pidgin, and not simply "erroneous usage".

CHAPTER FOUR

4.1 The Experiment

The problem of Deaf English is an interesting one linguistically,

and investigations of it would be valuable in providing insight into the

ways in which the deaf learn and process spoken/written language, the

difficulties they encounter, and what might be done about these diffi-

culties.

The Charrow and Fletcher study (1974, in press) appears to indicate

that Standard English is not the native language of deaf students. Since

ASL is the native language of only a small minority of deaf persons,

attempts should be made to ascertain what is--or can be thought to be--the

native language of most congenitally deaf persons. I have suggested in

Chapter 2 that the average prelingually deaf child of hearing parents has

no language in the sense of a shared code. Unless he is thwarted, he

probably devises his own ways of organizing reality and expressing at

least some actions and relationships by means of an idiosyncratic gestural

language. I have suggested that for all profoundly prelingually deaf

children English is learned as a second, or foreign, language. The result

of this second-language learning does not, for the most part, appear to

be Standard English, but rather a nonstandard dialect (or a pidgin) of

English--a "Deaf English"--which until now has been regarded only as

"errors" or "deafisms". Nonetheless, this is the English which the deaf

person uses when English is required, and although it may improve in the

direction of Standard English, in most cases it probably will not.

The purpose of this dissertation is to demonstrate that there is a

variety of nonstandard English--a "Deaf English"--which is used, usually

in written form, by most deaf persons in a given geographical area. If deaf persons understand each other's written communications, it is because the grammar of these communications is Deaf English grammar. It is also probable that deaf persons do not comprehend Standard English as well as they comprehend Deaf English. In the "Deaf English" subtest of the experiment below, I have used grammatical constructions which appeared typical of deaf usage (as judged by experienced teachers of the deaf), along with some constructions which were linguistically interesting but whose typicalness was more doubtful. Results of an error analysis should indicate which items and constructions are shared by the deaf subjects, and which are idiosyncratic. These results can serve as a basis for a linguistic description of Deaf English.

The experiment itself might best be described as an investigation of the grammatical competence of users of Deaf English. According to Chomsky (1965), competence is "the speaker-hearer's knowledge of his language", and it should not be confused with performance--"the actual use of language in concrete situations" (p. 4). Performance may be affected by grammatically irrelevant conditions such as slips of the tongue, memory limitations, inadvertent errors and distractions. Competence, by definition, cannot be affected by any such conditions. This very definition, however, makes it exceedingly difficult to examine competence with any degree of validity. It is impossible to look at linguistic competence without observation and measurement of some aspects of performance. There are some performance measures which are felt to come closer to examining competence than others: those that rely upon the subject's unconscious linguistic intuitions and at the same time, by

their structure and methodology, attempt to utilize memory limitations as a variable (e.g., Miller, 1962). Typically, in tests of linguistic competence, subjects have been asked to judge the relative grammaticality (or "rightness") of a number of similar utterances. Jean Berko (1958), in the well-known "wug" experiment, questioned children, using specially constructed pictures and nonsense syllables, to get at their growing knowledge of English morphological rules. In another cl ssic study of child language acquisition, Fraser, Bellugi and Brown (.963) asked their child subjects to repeat sentences with and without corresponding pictures as cues, to discover whether knowledge of certain grammatical rules must precede both imitation and production capabilities--the ICP Test. Their results indicated that very young children produce more correct responses in an imitation task than in a comprehension task, and more correct responses in the comprehension task than in a production task.

The present experiment is based in part on the methodology of Fraser, Bellugi and Brown, although I have not started from their premises, nor have I used very young children as subjects. The experiment also shares the premise of Baratz (1969) that if a dialectal handicap is "equalized" for nonstandard speakers, they should perform as well as standard language speakers. That is, if persons primarily use a nonstandard dialect of a language, they should perform as well in their own dialect as the standard speakers do in the standard dialect. By the same token, the standard speakers should perform more poorly in the nonstandard dialect than the nonstandard speakers.

The final premise of the experiment is that, if persons know two dialects of a language but are more fluent in one of them, they should

perform better in their stronger dialect than in the weaker one, in a

test which measures in a balanced way their competence in both dialects.

If there is a dialect of Standard English, or an English-based pidgin,

common to the deaf in this geographical area--a "Deaf English"--and if

the items on the test I have devised are representative of Deaf English,

then, if the deaf subjects are more "fluent" in Deaf English than in

Standard English, they should perform better in imitating Deaf English

sentences than in imitating Standard English sentences. Indeed, according

to Stokoe's (1971) observation of deaf students, it is possible that the

deaf subjects would process Standard English sentences as though they

were Deaf English, and believe they were imitating Standard English when

they were actually producing the Deaf English equivalent of a Standard

English model.[4] If it can further be shown that hearing Standard English

speakers perform better in a test of Standard English competence than

the deaf subjects, and worse in a test of Deaf English competence, then

it would be reasonable to assume that the Standard English and Deaf

English items were valid for testing the hypothesis, and that Deaf English

is the more normal means of (written) communication than Standard English

for the deaf subjects. If both groups were to perform equally well/poorly

on the Standard English items, it could mean either that one hypothesis

is disproven--i.e., the deaf are as competent in Standard English as the

hearing--or that the Standard English items were invalid. It is highly

unlikely, however, that both groups would perform equally well/poorly

on the SE subtest--unless the Standard English items are too easy--since

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[4]Similarly, speakers of West African Pidgin often believe they are
speaking Standard English, even when they have heard both varieties of
English spoken (R. Agheyisi, personal communication, 1971).

all previous tests have shown the deaf to be markedly inferior to the hearing in English. If both groups perform equally poorly in the Deaf English subtest, it could mean that the other hypothesis is disproven-- i.e., the Deaf English represented by the test sentences is not a dialect of the deaf or the hearing. Or if both groups perform equally well, it might indicate that the items were too easy, and could be memorized by both groups in spite of the strange grammatical structure. The most likely assumption, however, would be that the Deaf English items chosen for the test represent a simplification of Standard English--like a pidgin, perhaps--that is as easy for a Standard English speaker to use and remember as it is for a Deaf English user. This might well be the case, as I suggested (in Chapters.2 and 3) that Deaf English is a "freezing" of English grammatical structure before all of English grammar can be assimilated and integrated. It may be a "simplified" English (cf. Menyuk, 1969, pp. 126-143).

There is also the possibility that the deaf subjects may perform better in the Standard English items than in the "Deaf English" items. In that eventuality, there are three possible explanations: (1) the most obvious explanation, although not necessarily the true one, is that the hypothesis is disproven--Deaf English is not the more normal means of written communication for the deaf. (2) More plausibly, the "Deaf English" items used in the test are not common to all the deaf subjects-- i.e., the Deaf English which I have constructed for the purposes of the experiment is not the real Deaf English. (3) It is possible that no clear line can be drawn between Standard English and Deaf English. Deaf English acquisition is not, after all, like regular language acquisition, in which, according to Menyuk (1969), a series of approximations to

Standard English rules finally results in correct use of the Standard
English rules. In Deaf English there probably is not enough input and
feedback to confirm or negate any but the grossest hypotheses about
English grammatical structure. What may then result is a number of
warring linguistic hypotheses and concomitantly variable English
language rules, yielding in some cases--in the same deaf individual--a
closer approximation to Standard English than in other cases.

Whatever the results of the experiment, they can provide insight
into the deaf adolescent's knowledge of English. The data may yield
some specific information on the nature of English processing errors
the deaf person is most likely to make, and the commonality of these
errors among the deaf.

Since the subjects under investigation here are deaf, the test was
a written one, which may have led to non-oral performance errors. There
is nothing inherent in this procedure which would confound the results.
If a plural marker or other morphological ending is omitted in the
subject's written repetition of a Standard English sentence, that tends
to indicate a lack of knowledge in this area of Standard English grammar,
rather than sloppy writing skills. And since there is a hearing control
group, any such errors on the part of the deaf subjects would have to be
viewed in light of the probability of such errors occurring among the
hearing controls. If the deaf subjects make more such errors in Standard
English than the hearing subjects, one could fairly conclude that the
"error" is not a performance error, but rather an index of the deaf subject's
competence in Standard English.

Studying the written form of a language or dialect necessarily has

its own pitfalls. Because it is by its nature not as spontaneous as oral communication, it is more likely that the forms produced will be more carefully thought out, and less likely to be "pure" Deaf English. Certainly, if the deaf student has been taught for many years to use determiners before nouns, even though by inclination and by the rules "agreed upon" by the deaf linguistic community determiners are to be omitted, in a writing situation he might find his inclination at war with his training. As a result, he might produce in some writing samples no determiner, in others the correct determiner, and in still others the incorrect determiner. Thus samples of written Deaf English from the same person might include structures spanning the entire spectrum of English usage--all the way from grammatical Standard English, through less and less grammatical forms, through the nonstandard but shared structures, to the very idiosyncratic ones (cf. Dalby, 1971, p. 119). Since the deaf child has these warring influences of linguistic community versus educators, like the Black Nonstandard English speaker, but, unlike the black child, has little feedback and reinforcement from either direction, the dialect may not have as clearcut boundaries as Black English (although it has been suggested that the boundary between Black English and Standard English is itself not clearcut). Thus, it may be that constructions in Standard English and Deaf English are used and interchanged optionally, with fewer social and linguistic restrictions on their use.

4.2 <u>Method</u>

Subjects were fifteen profoundly prelingually deaf students in junior high school at the California School for the Deaf in Berkeley, California. Seven of the subjects were children of deaf parents, who had learned ASL

from their earliest years, and eight were children of hearing parents, who had learned ASL much later, at various ages, in school. Four of the deaf children of deaf parents were female, and five of the deaf children of hearing parents were female. In addition, there was a control group of nine hearing subjects, nine and ten years of age, three female, six male. All were in grade four at a Palo Alto elementary school, and were controls for reading grade level. All the deaf subjects had I.Q.s in the average or slightly above average range (DH: $\bar{X} = 106.8$, SD = 4; DD: $\bar{X} = 110$, SD = 9). I.Q. scores for the hearing controls were unavailable, but were judged by the principal to be in the average or slightly above average range. Reading grade level for the deaf subjects ranged from 2.5 to 5.4, with a mean of 3.6 (SD = .7) for the deaf children of hearing parents and a mean of 3.9 (SD = .7) for the deaf children of deaf parents. These scores had been obtained at the end of the previous school year, and so there probably was some growth in the reading grade equivalent scores in the intervening eleven months. Other studies of deaf children's reading attainment (Wrightstone, Aronow and Moskowitz, 1963) have indicated that reading grade equivalent scores typically increase less than one grade level from age 10.5 to age 16.5, so we can assume that the reading scores of the deaf subjects in this study had not increased more than .5 grade level. No reading scores were available for the hearing fourth graders, but all were felt by their teachers to be average readers, and none was judged to be reading above the fourth grade level.

The instrument was a written test, presented to each subject individually on a "TEC" computer terminal and cathode ray tube. The test consisted of 100 sentences, fifty in "Deaf English", based upon sentences

written by deaf adolescents, and fifty equivalent Standard English
"translations" (see Appendix A). The sentences were presented on the
cathode ray tube in different random orders generated for each subject.
Instructions for the test were given orally to the hearing subjects,
and in Total Communication (orally and in Signed English) to the deaf
subjects. The subjects were also asked to read the instructions (see
Appendix B), and were then given two sample items to perform to make
certain they had understood the instructions. The experimenter then
asked if there were any questions or problems, answered them, and
permitted the subject to begin. The subject pressed any letter on the
keyboard, and the first sentence appeared on the screen. Each sentence
stayed on the screen for 6.5 seconds and then disappeared. The subjects
had been informed that they could repeat the sentence aloud when it
appeared, or (for the deaf) sign or fingerspell or say it. Once the
sentence disappeared, the subject was required to write it, as he or
she remembered it, on an answer sheet provided for that purpose.
Subjects had unlimited time for writing their responses, and when a
subject was ready for the next sentence to appear she/he pressed any
letter on the keyboard. No more than two subjects were tested at any
one time, and each subject had his own TEC, which generated and then
stored the random sentence order for each subject. The deaf subjects
took one to one and one-half hours to complete the test, while the
hearing controls took two to two and one-half hours. This time difference
is not surprising if one keeps in mind the difference in age between
the two groups. Although all subjects were reading at the grade four
level, the hearing subjects were actually fourth graders, nine and ten

years old, who had only just learned cursive writing. The deaf students, on the other hand, had a mean age of 14.9 years ($\bar{X} = 14.6$, SD = .5, for the deaf children of deaf parents; $\bar{X} = 15.2$, SD = .5, for the deaf children of hearing parents), and a great deal of experience in writing, spelling and copying. The time difference was a function of writing speed, but this does not appear to have affected the results.

4.3 Test Construction

The "Deaf English" sentences were devised first, and the Standard English sentences were then composed to correspond to each Deaf English sentence. The Deaf English sentences were based upon a corpus of letters and compositions written by deaf junior high-school students on teletype at a number of schools for the deaf in California and Washington, D.C. I went through this corpus, looking for frequently occurring grammatical constructions, and made a list of one hundred and fifty of those sentences with phrase-types, clause-types, and lexical items which seemed most typical of the whole corpus. I then gave this list to teachers of the deaf in San Francisco, Palo Alto, and Berkeley, California, and asked them to find those constructions and lexical items in the 150 sentences which they felt were most typical of the deaf children they had taught. The teachers represented different methods of deaf education: there were two oral teachers, from Palo Alto, and three Total Communication teachers, from Berkeley. One of the latter had been an oral teacher up until a few years ago, and the other two were themselves deaf. There was one Total Communication teacher from San Francisco, who was also deaf.

Those sentence items that three or more of the teachers agreed were common among the deaf students they had taught were retained for the test.

In cases where fewer than three teachers felt sure that the item in question was common among their students, that item was retained (for investigative purposes) if it was linguistically interesting. Those constructions or lexical items that none of the teachers had encountered before were eliminated. This investigator later added two or three constructions of her own, for investigative purposes (these are starred; cf. Section 4.5).

Using the types of constructions that deaf children themselves had written unfortunately limited the scope of this investigation of Deaf English; a different corpus, from different students, might have provided other kinds of constructions that the deaf use fairly frequently and consistently, or types of grammatical constructions that they might process more easily. This is another aspect of the competence/performance dilemma: these deaf students' written output does not necessarily reflect accurately their grammatical competence. It is possible that the students who produced the original sentences were "on their best behavior linguistically, and were producing relatively less common or less "natural" (to them) types of constructions. Because teachers would be familiar with such constructions from other exercises where the students have "tried their best", they might consider these the more common constructions, overlooking the less frequent--perhaps more erroneous, but more "natural"-- constructions. Nonetheless, the method used was a reasonable way to construct and validate items, although hindsight may suggest some other possibilities.

The Standard English sentences ranged in length from 8 words--10 morphemes (sentences 85 and 94), to 14 words--18 or 19 morphemes (sentence 99). The Deaf English sentences ranged in length from 6 words--7 morphemes

(sentence 30), to 11 words--14 morphemes (sentences 8 and 49). Mean sentence length in Standard English was 10.3 words (13.8 morphemes); mean sentence length of Deaf English sentences was 8.7 words (10.6 morphemes). This difference in mean sentence length is one of the salient differences between Standard English and Deaf English (whatever its actual form). Deaf English is hypothesized to be, in essence, a "simplified" English, with less morphological complexity than Standard English.

Some of the Deaf English and Standard English sentences used in the test were constructed specifically to test certain hypotheses dealing with implicational universals. For example, it appeared from the deaf children's writing samples that if a sentence relating to past time were to contain more than one verb, then in the most likely case there would be no past tense markers; but if there were to be a tense marker, it would attach itself to the first verb in the sentence.

4.4 Pilot Test

In order to determine the optimum exposure time for the sentences on the TEC screen, a pilot version of the test was run, using four pre-lingually deaf junior high school students in a class for the deaf at San Jose High School. (Total Communication was the method of instruction utilized in this class.) For the first pilot subject, the test was programmed to run at 8 seconds per sentence, but the subject found this very easy, and produced almost no errors in either the Standard English or the Deaf English sentences. With the next subject, a speed of 5 seconds per sentence was tried, but this proved to be too fast for her to read. Finally, 6.5 seconds was tried, and this exposure time gave the

two remaining pilot subjects sufficient time to read each sentence, but

not enough time to memorize it. This presentation speed appeared to be

ideal for getting at linguistic competence, as it provided a trade-off

between memory load and linguistic comprehension.

Results of the pilot test also underlined the necessity of ordering

the sentences such that no sentence in one dialect (e.g., Deaf English)

would be immediately preceded or followed by its counterpart in the

other dialect.

4.5 The Test Items

In this section, I will provide a brief linguistic description of

the Deaf English sentences with reference to their Standard English

counterparts. In all cases, the differences between the two are surface

structure differences, due to one of the follwing: a lexical difference;

non-application of Standard English rules; application of the inappropriate

Standard English rule; or application of a non-Standard English rule.

The semantic structure underlying each pair of sentences is essentially

the same--they are intended to mean the same thing. It is only the ways

of saying it (syntactically) that differ.

I will outline the differences between the two types of sentence

in terms of (Deaf English) deviances from Standard English. Some of the

differences are analogous to differences between English and ASL; others

appear to be misinterpretations of English lexical usage. Some may be a

result of overgeneralization of Standard English rules, and some may turn

out to be idiosyncratic. It is more practical at this point--when the

structure, and even the existence, of Deaf English is hypothetical--to

describe the Deaf English test items in this manner, rather than to

construct a whole set of rules for their derivation. Such a treatment
is more reasonable in an exploratory study like this one. Once the
regularities of a Deaf English have been established, syntactic rules
can be written.

Starred (*) items in the outline are those which the experimenter
added to the test, to discover whether the subjects were "translating"
literally from signs to English, or "simplifying" in a type of pidgin-
ization process. (For a listing of the test items, see Appendix A.)

(1) SE "likes" → DE "like to": omit present tense marker (// ASL);

substitute [V + Comp] (like to) for

[V_{trans}] (like) (overgeneralization,

false analogy)

SE "won't be able to" → DE *"will can't": substitute "can" for

"able to" (relexification of concept);

transfer Neg from Modal (will) to "can"

(// ASL)

(2) SE "went" → DE "go to": omit past tense marker (// ASL);

add redundant Prep "to" (false analogy

with "go to store")

SE "he" → DE *"Jack": antecedent replaces Pronoun (pidgin-type

simplification)

SE "had a sore toe" → DE "sore his toe": reinterpretation of "sore"

as a verb (// ASL; analogous to "hurt")

(3) SE "told" → DE "say": omit past tense marker (// ASL);

substitute "say" for "tell" (semantic

simplification)

80

SE "was" → DE "am": omit past tense marker (// ASL)

SE "I was late" → DE "late": omit redundant Pronoun and Aux BE

(simplification; // ASL)

(4) SE "thinks" → DE "think so": omit present tense marker (// ASL);

substitute [V + Comp] (think so) for

[V] (think) (overgeneralization of

SE idiom "I think so")

SE "is" → DE ∅: omit copula BE (// ASL; pidgin-type simplification)

SE "smart enough" → DE "smart": omit quantifier (simplification)

SE "the" → DE ∅: omit article (// ASL)

(5) SE "danced" → DE "dance": omit past tense marker (// ASL)

SE "was" → DE ∅: omit Aux BE (// ASL)

SE "brave enough" → DE "brave": omit quantifier (simplification)

(6) SE "in" → DE ∅: omit Prep (// ASL: "sit" = "sit on/in/etc.")

SE ∅ → DE "I": reiterate Pronoun (pidgin-type 'simplification')

SE "wrote" → DE "write": omit past tense marker (// ASL)

SE "a" → DE ∅: omit article (// ASL)

SE "write you a letter" → DE *"write letter you": word-order change

or omission of Prep "to" (simplification)

(7) SE "at" → DE ∅: omit Prep (// ASL)

SE "night's" → DE "night": omit Possessive (// ASL)

SE "was" → DE ∅: omit [copula BE + tense marker] (// ASL)

SE "full of" → DE "full": omit Prep (Comp) (// ASL)

(8) SE "to" → DE ∅: omit Prep (simplification)

SE "slept" → DE "sleep": omit past tense marker (// ASL)

SE "at" → DE ∅: omit Prep (// ASL)

(9) SE "a lot of" → DE "many": substitute one word for phrase (simpli-
fication)

SE "liver" → DE "livers": add plural marker to mass Noun (false
analogy, or misunderstanding of Noun
class [Mass])

SE "corn" → DE "corns": add plural marker to mass Noun (false analogy,
or misinterpretation of Noun class)

(10) SE "played" → DE "play": omit past tense marker (// ASL)

SE "a" → DE ∅: omit article (// ASL)

SE "enjoyed ourselves" → DE "enjoy": omit past tense marker (// ASL);
omit 'redundant' reflexive
(simplification; // ASL)

(11) SE "the" → DE ∅: omit article (// ASL)

SE "said" → DE "say": omit past tense marker (// ASL)

SE ∅ → DE *"you": overt manifestation of underlying Pronoun
(possible pidgin-type 'simplification')

SE "the man is" → DE "man": omit article (// ASL);
omit [copula BE] (// ASL)

(12) SE "bought" → DE "buyed": substitute past tense marker (false analogy)

SE "a lot of" → DE "many": substitute one word for phrase (simplifi-
cation; // ASL)

SE "furniture" → DE "furnitures": add plural marker to mass Noun
(false analogy, or misunderstanding
of Noun class)

(13) SE "finished" → DE "finish": omit past tense marker (// ASL)

    SE "what I was doing" → DE "to do": substitute infinitive for

                                   relative Noun clause (pidgin-

                                   type simplification)

    SE "played" → DE "play": omit past tense marker (// ASL)

(14) SE "told" → DE "say": omit past tense marker (// ASL);

                      substitute "say" for "tell" (semantic

                      simplification)

    SE "ate" → DE "eat": omit past tense marker (// ASL)

    SE "a" → DE ∅: omit article (// ASL)

    SE "of" → DE ∅: omit Prep (// ASL)

(15) SE "brushed" → DE "brush": omit past tense marker (// ASL)

    SE "teeth" → DE "tooth": omit plural marker (// ASL)

    SE "put on" → DE "wear": omit past tense marker (// ASL);

                      substitute single lexical item for

                      [V + Comp]

(16) SE "interested" → DE "interesting": substitute present participle

                                for past participle (false

                                analogy to "X is interesting")

    SE "in learning" → DE "to learn": substitute Infinitive for [Prep +

                            present participle] (simplification)

    SE "what Lincoln said" → DE "what did Lincoln say": substitute

                      direct question for indirect question

                      (generalization of conjunction rule;

                      overgeneralization of earlier rule)

(17) SE "whose" → DE ∅: omit Relative Pronoun (// ASL)

    SE "went" → DE "go": omit past tense marker (// ASL)

    SE "a" → DE ∅: omit article (// ASL)

    SE "wrestling" → DE "wrestle": omit participial (Adj) ending (// ASL)

(18) SE "likes" → DE "like": omit present tense marker (// ASL)

    SE "to" → DE ∅: omit infinitive marker "to" (// ASL)

    SE "for a walk" → DE "to walk": substitute infinitive for SE

                             idiomatic phrase (simplification;

                             perhaps false analogy)

(19) SE "a" → DE ∅: omit article (// ASL)

    SE "young girl" → DE "girl young": [Adj + Noun] → [Noun + Adj];

                             word-order change (// ASL)

    SE "heard" → DE "heared": substitute wrong past tense marker

                             (overgeneralization or false analogy)

    SE "a" → DE ∅: omit article (// ASL)

(20) SE "a" → DE ∅: omit article (// ASL)

    SE "water"(V) → DE "give water": substitute familiar [V + N] for

                             less familiar [V] (pidgin-type

                             simplification)

    SE "the" → DE ∅: omit article (// ASL)

    SE "to make it grow" → DE "grow up": substitute [V (+ Comp)] for

                       infinitive phrase (simplification);

                       omit Pronoun (// ASL);

                       omit overt (redundant?) causative

                       (simplification).

(21) SE "there are" → DE "we have": substitute more frequent [Pron + V]

construction for less frequent one

[expletive + BE] (simplification)

SE "living" → DE "that they live": substitute subordinate clause for

present participle (false analogy;

or relexification of concept);

add Pronoun "they" (clarification)

SE "on" → DE ∅: omit Prep (// ASL)

(22) SE "rabbits" → DE "rabbit": omit plural marker (// ASL)

SE "are" → DE "is": omit plural marker on copula BE (simplification)

SE "as soft as" → DE "soft *alike": substitute Adj "alike" for

Adj "like" (// ASL);

substitute Adj "alike for

coordinate conjunction "as...as"

(// ASL)

SE "pillows" → DE "pillow": omit plural marker (// ASL)

(23) SE "met" → DE "meet": omit past tense marker (// ASL)

SE "a" → DE ∅: omit article (// ASL)

SE "who" → DE "that he": substitute Relative Pronoun (indefinite)

+ Pronoun for Relative Pronoun (relexifi-

cation of concept; or overgeneralization

of conjunction rule)

SE "wrote" → DE "write": omit past tense marker (// ASL)

SE "books" → DE "book": omit plural marker (// ASL)

(24) SE "younger" → DE "young": omit comparative ending (simplification)

SE "younger brother → DE "brother young": [Adj + Noun] → [Noun + Adj]

(word-order change; // ASL)

SE "stays" → DE "stay": omit present tense marker (// ASL)

SE "to" → DE ∅: omit Prep (or Comp) (// ASL)

(25) SE "is painted" → DE "painting": substitute present participle for

Passive (simplification; // ASL)

SE "has" → DE *"with": substitute Prep for V (simplification?)

SE "a" → DE ∅: omit article (// ASL)

(26) SE "there is" → DE "NP has NP": substitute more frequent construc-

tion type for less frequent type

(simplification)

SE "in front of my house" → DE "my front of house": substitute

idiom for prepositional phrase (false

analogy to e.g., "my cup of tea"

SE "a" → DE ∅: omit article (// ASL)

SE "trees" → DE "tree': omit plural marker (// ASL)

(27) SE "NP will be put" → DE "house will put NP": substitute active for

passive construction (// ASL)

SE "a" → DE ∅: omit article (// ASL)

(28) SE "a" → DF ∅: omit article (// ASL)

SE "black dog" → DE "dog black": [Adj + Noun] → [Noun + Adj]; word-

order change (// ASL)

SE "ran" → DE "run": omit past tense marker (// ASL)

SE "after" → DE *"follow": substitute V for Prep with similar

meaning (pidgin-type simplification?)

SE "little boy" → DE "boy little": [Adj + Noun] → [Noun + Adj]

(word-order change; //ASL)

SE "a" → DE ∅: omit article (// ASL)

(29) SE "plays" → DE "play": omit present tense marker (// ASL)

SE "plays a game" → DE "game play": omit article (// ASL);

[V + NP] → [NP + V] (word-order

change; // ASL?)

(30) SE "the"(2x) → DE ∅: omit article (// ASL)

SE "is"(2x) → DE ∅: omit copula BE (// ASL; simplification)

SE "very" → DE "too": substitute superlative for Adv (pidgin-type

simplification)

SE "a" → DE ∅: omit article (// ASL)

(31) SE "have eaten" → DE "finish eat": substitute [V + V] for compound

tense V with similar meaning;

omit perfective "en" (// ASL)

SE "a lot of" → DE "many": substitute one word for phrase (// ASL;

simplification); incorrect use of "many"

with mass Noun (false analogy or mis-

understanding of Noun class)

SE "am" → DE ∅: omit copula BE (// ASL)

SE "of" → DE ∅: omit Prep (or Comp) (// ASL)

(32) SE "won't be able to" → DE *"will can't": substitute "can" for

"able to" (relexification of concept);

transfer of Neg from Modal "will" to

"can" (// ASL)

SE "his" → DE *"Tom": substitute antecedent for Pronoun (simplifi-

cation; // ASL)

SE "his hand hurts" → DE "sore his hand": reinterpretation of "sore"

as V (false analogy to V "hurt"; // ASL)

(33) SE "likes" → DE "like to": omit past tense marker (// ASL);

substitute [V + Comp] "like to" for

$[V_{trans}]$ "like" (false analogy)

SE "she" → DE *"Mary": substitute antecedent for Pronoun

(simplification)

SE "sent" → DE "send": omit past tense marker (// ASL)

SE "a" → DE ∅: omit article (// ASL)

SE "sent me a letter" → DE "send letter me": word-order change or

omit Prep (// ASL)

(34) SE "drove" → DE "drive": omit past tense marker (// ASL)

SE "a"(2x) → DE ∅: omit article (// ASL)

SE "sat" → DE "sit": omit past tense marker (// ASL)

SE "in" → DE ∅: omit Prep (// ASL; "sit" = "sit on/in/etc.")·

(35) SE "pretty girls" → DE "girl pretty": omit plural marker (// ASL);

[Adj + Noun] → [Noun + Adj]

(word-order change; // ASL)

SE "on" → DE ∅: omit Prep (simplification; or reinterpretation of

"live" as $[V_{trans}]$)

(36) SE "interested" →,DE "interesting": substitute present participle

for past participle (false analogy to "X is

interesting")

SE "in reading" → DE "to read":   substitute Infinitive for [Prep +

present participle] (pidgin-type

simplification)

(37) SE "says" → DE "say": omit present tense marker (// ASL)

SE "has" → DE "have": omit present tense marker (// ASL)

SE "brothers" → DE "brother": omit plural marker (// ASL)

SE "sisters" → DE "sister": omit plural marker (// ASL)

(38) SE "fought" → DE "fight": omit past tense marker (// ASL)

SE "ran" → DE "run": omit past tense marker (// ASL)

(39) SE "eating" → DE "eat": omit present participle ending (// ASL)

SE "to" → DE ∅: omit Prep (simplification)

(40) SE "is" → DE ∅: omit copula BE (// ASL)

SE "as modern as" → DE "modern like": substitute Adv for coordinate

conjunction (// ASL)

SE "houses" → DE "house": omit plural marker (// ASL)

(41) SE "is" → DE ∅: omit copula BE (// ASL)

SE "breaking" → DE "break": omit present participle ending (// ASL)

(42) SE "scared" → DE "scare": omit past participle ending (// ASL)

SE "a" → DE ∅: omit article (// ASL)

SE "bit" → DE "bited": substitute wrong past tense marker (false

analogy or overgeneralization)

(43) SE "a" → DE ∅: omit article (// ASL)

SE "who" → DE "that he": substitute Relative Pronoun (indefinite) +

Pronoun for Relative Pronoun (relexification

of concept)

SE "looks" → DE "look": omit present tense marker (// ASL)

SE "like" → DE *"alike": substitute Adv for Prep (// ASL, where

"like" = "alike")

(44) SE "have learned a lot" → DE "have a lot of learn": substitute

frequent present tense construction "have

(a lot of) N" for less frequent compound

tense "have [V + en] (a lot)" (simplifica-

tion, or relexification of concept, or

false analogy--e.g., "have a lot of X",

where X = "learn"; NB.in ASL "learn" =

"learning")

(45) SE "said" → DE "say": omit past tense marker (// ASL)

SE ∅ → DE *"you": overt manifestation of underlying Pronoun

(pidgin-type 'simplification')

SE "the" → DE ∅: omit article (// ASL)

SE "us" → DE ∅: omit (redundant) surface Obj (simplification)

SE "is" → DE ∅: omit copula BE (// ASL)

(46) SE "the" → DE ∅: omit article (// ASL)

SE "asked" → DE "ask": omit past tense marker (// ASL)

SE "was" → DE ∅: omit [copula BE + tense] (// ASL)

(47) SE "trees" → DE "tree": omit plural marker (// ASL)

SE "N will be planted" → DE "back yard will plant N": substitute

active for passive construction (// ASL);

(or false analogy, using inanimate Agent

"back yard")

(48) SE "X was fed by Y" → DE "Y feed X": substitute active for passive

construction (// ASL);

omit past tense marker (// ASL)

(49) SE "went" → DE "go": omit past tense marker (// ASL)

SE "to" → DE ø: omit Prep (pidgin-type simplification)

SE "got" → DE "get": omit past tense marker (// ASL)

SE "a lot of" → DE "many": substitute one word for phrase (// ASL;

simplification)

SE "sand" → DE "sands": add plural marker to mass Noun (false

analogy or misunderstanding of Noun class)

SE "shoes" → DE "shoe": omit plural marker (// ASL)

(50) SE "washes" → DE "wash": omit present tense marker (// ASL)

SE "the"(2x) → DE ø: omit article (// ASL)

SE "washes the floor" → DE "floor wash": [V + N] → [N + V] (word-

order change; // ASL)

SE "cleans" → DE "clean": omit present tense marker (// ASL)

SE "cleans the car" → DE "car clean": [V + N] → [N + V] (word-order

change; // ASL)

4.6 Scoring Method

Certain errors were expected from the subjects: errors of omission,

addition, and substitution; word-order changes; changes from active to

passive; and changes from passive to active. In addition to these errors

within the sentence, it was assumed there might be errors that affected

the entire sentence: omission of a whole sentence, or substitution of

either an anomalous sentence or a (grammatical) sentence entirely different

from the stimulus. For the coding of these error types, see Appendix C.

Errors within the sentence might occur on any morpheme, word, or words in the sentence, as well as between any two words in the sentence (e.g., additions), and so each sentence was divided into columns. Each column contained either a morpheme or the space which occurs between words or at the end of the sentence. Thus, "I ate three cookies" would have ten columns--6 for the 6 morphemes (I, eat, [Past], three, cookie, [Plural]), 3 for the 3 inter-word spaces, and one for the space at the end of the sentence. In this way any omission, addition, or substitution, etc. (cf. above paragraph) could be shown to occur in a given column of a given sentence. Errors by other subjects, in the same column, could thus be compared, or added, to determine group error patterns.

In addition to the Type of error, and its Location, a third parameter was deemed necessary to characterize any given error: error Intensity. There are seven intensities:

Intensity 1. An insignificant error, one which effects no real change in either the grammatical form or the meaning of the sentence.

Intensity 2. Also an insignificant error, effecting no real change in the grammar of the sentence, but possibly changing the meaning of it slightly (e.g., the substitution of the verb "run" for the original verb "walk"). Intensities 1 and 2 could occur in both Deaf English and Standard English sentences.

Intensity 3. This error intensity could occur only in the Standard English sentences. It denotes a serious error affecting the grammaticality of the Standard English sentence, resulting in what a native speaker would normally consider an "ungrammatical" construction (e.g., "goed" instead of "went", or "they has been").

Error intensities 4 and 5 could occur only in the Deaf English sentences, since they are errors that affect the "grammaticality" of these sentences.

Intensity 4. This describes the sort of error in which the item or construction has been changed or "corrected" in the direction of Standard English. Since Deaf English is expected to have certain grammatical forms that are different from Standard English, and, in certain cases, to apply (obligatory) Standard English rules only optionally, then a change in the direction of Standard English might be considered an "error" in Deaf English (e.g., "furniture" instead of the (hypothesized) Deaf English "furnitures").

Intensity 5. This describes an error in which the item or grammatical construction has been changed or "corrected" in such a way that it is even less like Standard English than the original--making the construction "more deaf", perhaps. In a number of the Deaf English sentences used in the test, certain Standard English rules, which were felt to be optional in Deaf English, were incorporated into the original sentence by the experimenter (e.g., some articles were used, and some tense markers). If the subject omitted these--i.e., failed to apply the optional rule-- then the change was made away from Standard English (perhaps in the direction of ASL), and might thus be thought of as a less standard and more "deaf" construction. Similarly, any change of a construction or item that is already Deaf English (e.g., "buyed") into yet another non-standard form (e.g., "buy", in a pat ime situation) would also be considered an Intensity 5 error--away from Standard English.

Intensity 6. This error could occur only in Standard English sentences. With this intensity error, the grammar of the sentence may

not be affected, but the meaning of the sentence is, and the result is
an item, construction, or sentence that makes no sense--an anomaly.

Intensity 7. This is an omission or omissions within either
Standard English or Deaf English sentences (usually toward the end),
as a result of memory limitations--omission via forgetfulness. This
error intensity was added when it was noted that subjects sometimes left
out the ends or middles of sentences simply because the item was too
long to remember. Intensity 7 errors are to be considered separately
from the other error intensities.

Thus, for each subject in the experiment, the errors or changes made
can be thought of as forming a 4-way matrix whose parameters are sentence
number, column within the sentence, error Type (addition, substitution,
etc.), and error Intensity (1-7, above). In this way, any of these four
parameters, as well as any combination of them, could be examined for
each individual subject and for each group of subjects. Any number of
different analyses can potentially be performed on the data, by virtue
of this scoring procedure--although because of time limitations and the
necessarily limited scope of this dissertation, only the most crucial ones
actually have been performed.

For the actual analyses, error intensities 1 and 2 were collapsed
and referred to as "trivial" errors. These were finally considered not
to be errors at all, and any sentence which had only trivial errors was
considered perfect. Intensities 3 and 6 were also collapsed, as there
were relatively few Intensity 6 errors, and the distinction between an
anomaly and an ungrammaticality was often very difficult to make.

4.7 Analysis

The data were analyzed using a multivariate analysis of variance (for unequal N). Three aspects of the data were examined: (1) overall errors--i.e., the relative frequencies, for each group, of perfect sentences (or those with only trivial--Intensity 1 or 2--errors), omitted sentences (error Type 1), and sentences with one or more serious errors (Intensities 3, 4, 5 or 6). (2) Errors within sentences, i.e., in those sentences with one or more serious errors, the relative frequencies of each error Intensity for each group. In this analysis, significant differences between the performances of the normal subjects (N), the deaf children of deaf parents (DD), and the deaf children of hearing parents (DH) in the DE and SE sentences could be discovered. (3) Errors within sentences in different parts of speech. Relative frequencies of 11 part-of-speech errors in the SE sentences were compared for the three groups, to determine specific differences in English competence. Similarly, frequencies of 9 part-of-speech errors in the DE sentences were compared across groups.

The 11 parts of speech examined in the SE sentences were: Present Inflection, Past Tense Marker, Copula, Preposition, Present Participle, Past Participle, Definite Article, Indefinite Article, Plural, Mass, and Future. The 9 parts of speech examined in the DE sentences were the same as the first 9 parts of speech examined in the SE sentences. Comparisons were also made between SE and DE for each of these 9 parts of speech within each group of subjects. This was done to determine whether there was any relationship for a given group between the number of errors made in SE and the number of errors made in DE for a given part of speech.

4.8 Results

4.8.1 Overall Errors

Frequency of errors (trivial, serious, omitted sentence) in SE and DE. Questions and results follow (for a summary of the results, see Tables 5 and 6, pp. 98-99).

Groups. Was there a significant difference among the three groups in the frequency of overall errors, averaged over both measures (SE and DE)?

Averaged over the 3 kinds of errors in both measures (SE and DE), the difference between the N group and the two Deaf groups (BD and DH) is significant ($p < .01$). The difference between the two Deaf groups is not significant (n.s.).

	N	(DH + DD)
$\bar{x}$	92.56	91.47

Figure 1

Language. Was there a significant difference between SE and DE performance, averaged over all groups?

Averaged over all groups, the difference between SE and DE performance is not significant. (However, Language by Group interactions are significant, cf. below.)

Error. Was there any significant difference between the average frequencies of the 3 types of sentence error (omission of sentence, sentence perfect or with only trivial errors, sentence with 1 or more serious grammatical errors), averaged over all groups?

Error is highly significant ($p < .001$). There are significant

differences in the average frequencies of the three types of sentence

error, averaged over all groups. Further analysis reveals that the

largest proportion of the variability associated with this source is

accounted for by the difference between frequency of omissions versus

the other two types of sentence error (p < .01).

Interactions:

Language x Error. Is there a significant difference between the

average frequencies of the 3 types of overall error in either of the two

languages (SE and DE), averaged over all groups?

Language x Error is significant (p < .01). The two one-degree of

freedom questions reveal that the significant interaction can be accounted

for by the differences between the numbers of trivial versus serious

errors in SE sentences versus DE sentences (p < .01). See Graph 1 (p. 94).

	SE	DE
Trivial	25.0	13.4
Omissions	2.1	2.8
Serious	21.8	26.8

Figure 2

Group x Language. Are there any significant differences among the

three groups on SE versus DE, averaged over all errors (including

trivial/perfect)?

Group x Language is n.s. The three groups did not perform signif-

icantly differently on SE versus DE averaged over all types of errors.

Group x Error. Is there any significant difference among the three

groups in any of the 3 types of overall error, averaged over language

(SE, DE)?
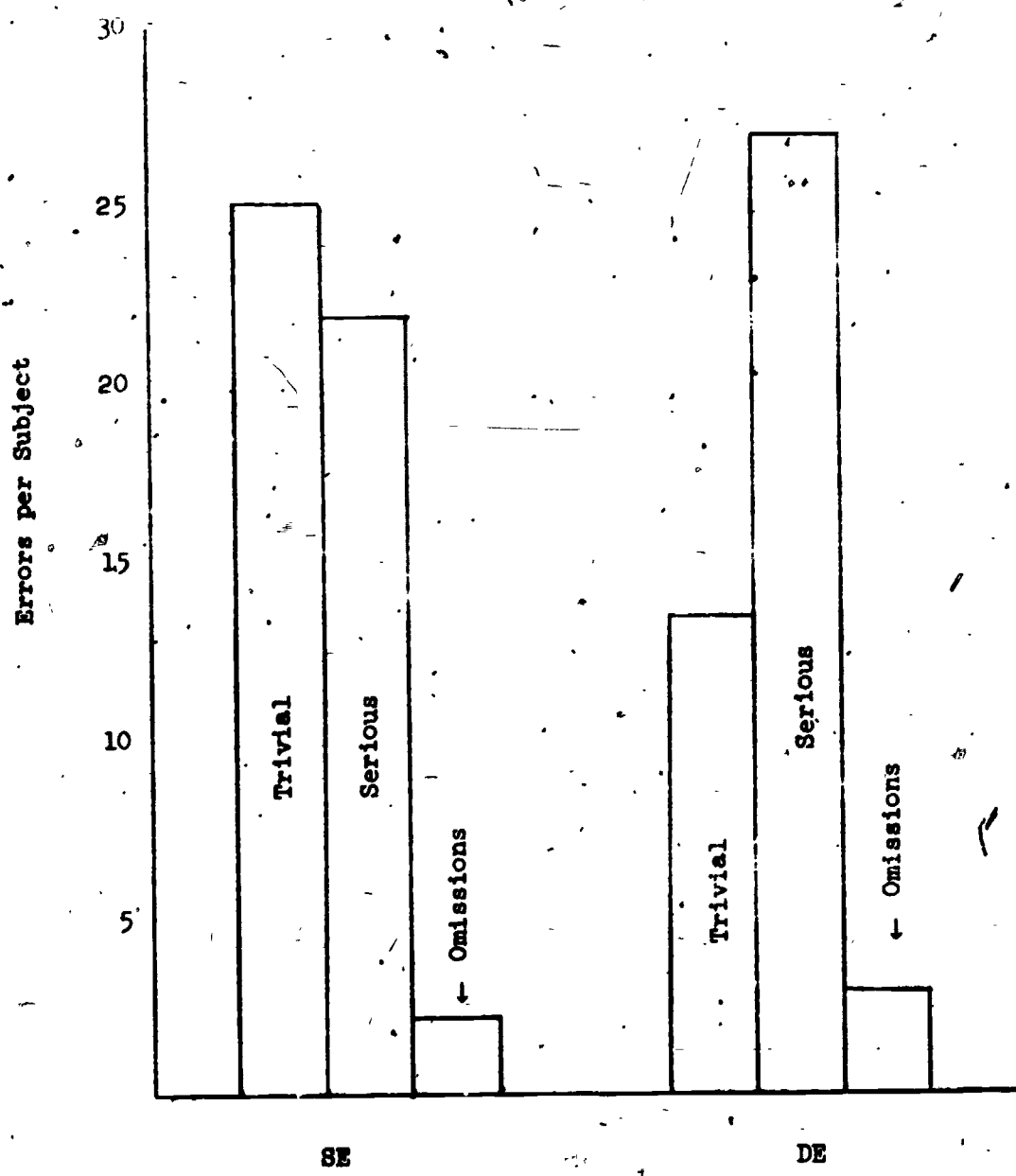
Graph 1

Overall Sentence Errors per Subject

in SE and DE Subtests

Group x Error, although only marginally significant, appeared to be a trend that was worth investigating further. Further analysis revealed that the difference between the Normal subjects and all Deaf subjects on Sentences Omitted versus the other two Error classifications was significant $(p < .01)$.

Furthermore, there was a significant difference $(p < .01)$ between Normals and all the Deaf on Trivial/Perfect versus Serious errors.

Thus, the difference here is Normal versus all Deaf, as Graphs 2, 3, 4, and 5 (p. 97) and Figures 3-7, below, show.

	SE	DE
Serious per Subject	7.6	25.2
Trivial/ Perfect per Subject	36.4	13.3

Normals

Figure 3

	SE	DE
Serious per Subject	30.3	27.7
Trivial/ Perfect per Subject	18.2	13.4

All Deaf

Figure 4

	Normals	All Deaf
Omissions per Subject	10.0	1.8
Trivial/ Perfect per Subject	49.8	31.6
Serious per Subject	32.8	58.1

Figure 5

	SE	DE
Omissions	3.7	6.3
Serious + Trivial	45.1	38.6

Normals

Figure 6

	SE	DE
Omissions	1.1	0.7
Serious + Trivial	48.5	41.1

All Deaf

Figure 7

Group x Error for SE. For the SE subtest, were there any signifi-
cant differences between the three groups of subjects in the frequency
of occurrence of the three overall sentence errors (sentence omitted,
perfect or erroneous)?

For SE alone, the following differences on the 3 overall sentence
errors were significant:

|		
Sentences with Perfect Scores or only Trivial Errors	Normals vs. Deaf	$(p < .01)$
Sentences with 1 or more Serious Errors	Normals vs. Deaf	$(p < .001)$

There were no significant differences among the three groups in the number
of sentences omitted. There were no significant differences between the
two groups of Deaf subjects on any of the 3 types of overall sentence
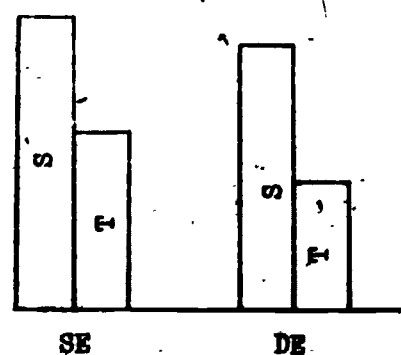error.

Group x Error for DE. For the DE subtest, were there any significant
differences among the three groups of subjects in the frequency of occur-
rence of any of the 3 overall sentence errors?

For DE alone, there was only one significant difference, between the
Normals and all the Deaf on sentences omitted, significant at the .05
level. Group x Error for SE and DE is summarized in Table 7 (p. 100).
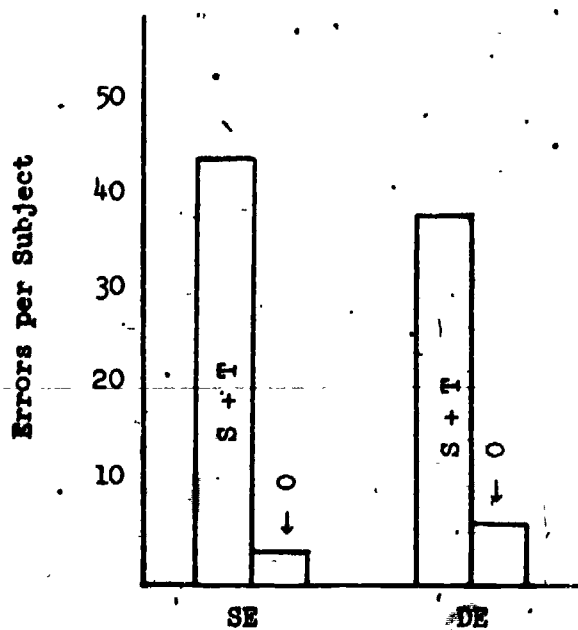
Serious vs. Trivial Errors
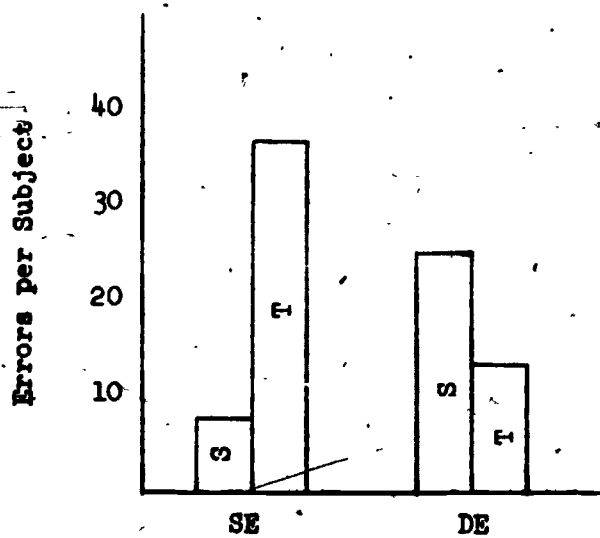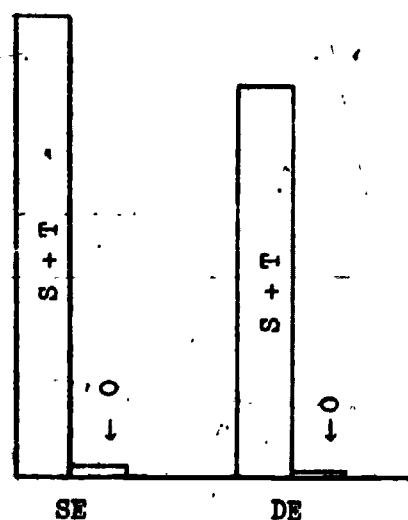

Graph 2 - Normals

Graph 3 - All Deaf

Serious + Trivial vs. Omissions

Graph 4 - Normals

Graph 5 - All Deaf

TABLE 5

Multivariate Analysis of Variance,

Overall Sentence Errors

Source of Variance	df	F-statistic
Groups (Normal vs. Deaf)	12,32	2.95**
Language (SE vs. DE)	1,21	0.9
Error (Omitted, Perfect, Erroneous Sentence)	2,20	224.8***
Language x Error	2,20	26.0**
Group x Language	2,21	0.12
Group x Error	4,40	6.1-

**p < .01

***p < .001

marginally significant

N.B. The analysis of variance is multivariate; therefore, mean squares
were not produced for each source, but were in matrix form.

TABLE 6

Multivariate Analysis of Variance, Overall Sentence

Errors, Further Analyses

Source of Variance		df	F-statistic
Groups	(1) Normals vs. All Deaf	6,16	8.0**
	(2) DH vs. DD	6,16	0.3
Error	(1) Omissions vs. the Rest	1,21	441.6***
	(2) Perfect/Trivial vs. Serious	1,21	10.1**
Language x Error	(1) Omissions vs. the Rest	1,21	0.8
	(2) Perfect/Trivial vs. Serious	1,21	53.2**
Group x Error	(1) Omissions vs. the Rest		
	(a) Normals vs. All Deaf	1,21	10.2**
	(b) DH vs. DD	1,21	0.3
	(2) Perfect/Trivial vs. Serious		
	(a) Normals vs. All Deaf	1,21	16.8**
	(b) DH vs. DD	1,21	1.07

** $p < .01$

*** $p < .001$

TABLE 7

Multivariate Analysis of Variance, Overall Sentence Errors,

SE and DE Sentences

Source of Variance		df	F-statistic
SE Sentences			
Perfect Sentence:	N vs. All Deaf	1,21	21.8**
	DH vs. DD	1,21	1.8
Omitted Sentence:	N vs. All Deaf	1,21	4.4
	DH vs. DD	1,21	0.5
Erroneous Sentence:	N vs. All Deaf	1,21	38.7***
	DH vs. DD	1,21	1.5
DE Sentences			
Perfect Sentence:	N vs. All Deaf	1,21	0.0
	DH vs. DD	1,21	0.2
Omitted Sentence:	N vs. All Deaf	1,21	12.5*
	DH vs. DD	1,21	0.1
Erroneous Sentence:	N vs. All Deaf	1,21	4.8
	DH vs. DD	1,21	0.1

* p < .05

** p < .01

*** p < .001

4.8:2 Serious Errors Within the Sentences (SE and DE)

Frequency of serious errors (omissions, substitutions, additions, word-order changes) within the SE and DE sentences, analyzed by Type and Intensity. Questions and results follow (summary in Table 8, p. 106).

Groups. Is there a significant difference among the 3 groups of subjects, averaged over 1 four Types of serious error?
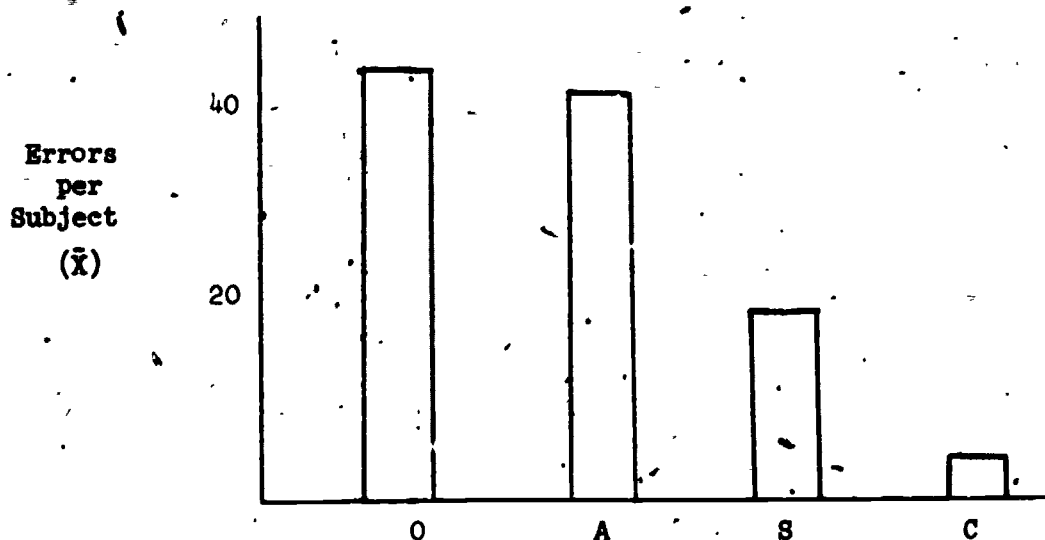
Groups is n.s.--the difference among the three groups of subjects averaged over all four Types of error is not significant.

Error. Is there a significant difference in the frequency of occurrence of the four Types of error (averaged over all subjects)?

Error is significant (p < .01), as the figure and graph below indicate.

	Omission	Addition	Substitution	(Word-order) Change
$\bar{X}$	43.2	40.5	18.6	4.1

Figure 8

Graph 6

Errors Per Subject by Type

Specifically, all four Types of errors are different from each other: (1) Omissions are significantly different from all the rest (p < .01). (2) Frequency of Substitution errors are significantly different from the average of Types 3 and 4, Additions and Word-order Changes (p < .01). (3) Frequency of Additions versus Word-order Changes is highly significant (p < .001), and accounts for most of the variability. (There were very many fewer Word-order Changes than any other Type of error.)

Intensity. Is t'ere a significant difference in the frequency of occurrence of the three error Intensities (averaged over all subjects)?

Intensity (3 = serious SE error; 4 = error in DE in the direction of SE; 5 = error in DE in the direction of DE) is significant at the .01 level. Further analysis reveals that this difference can be accounted for by the difference in frequency of errors of Intensity 4 versus errors of Intensity 5.
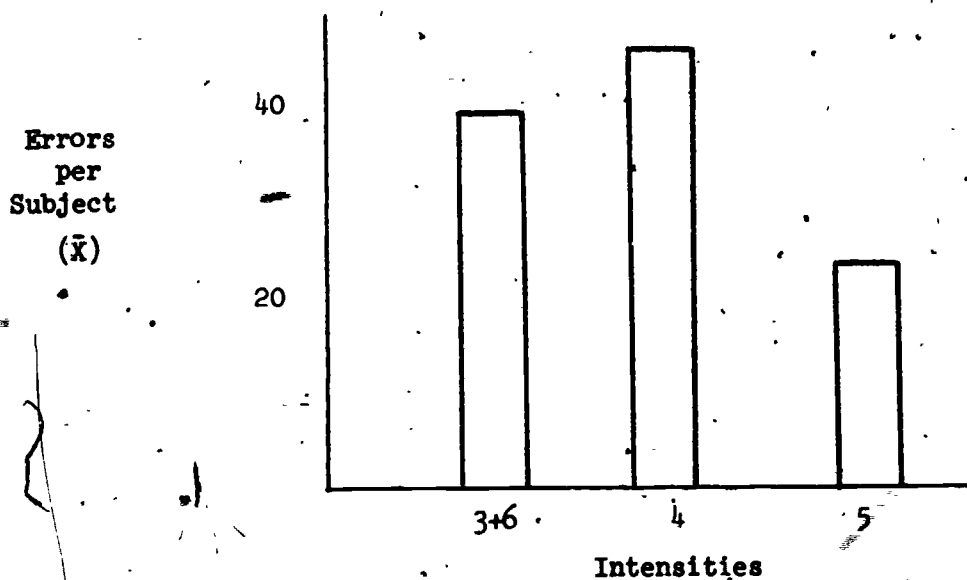
Interactions:

Error x Intensity. Are there any significant differences among the four Types (O, A, S, C) of error, in any of the three Intensities (3, 4, and 5)?

Error x Intensity is significant at the .01 level (see Figure 9 and Graph 7, below). See also Graph 8 (p. 104).

Intensity

	3 + 6(SE)	4(DE)	5(DE)
$\bar{X}$	38.5	45.5	22.5

Figure 9

Errors
per
Subject
$(\bar{X})$

40

20

3+6 · 4 5

Intensities

Graph 7

Errors per Subject by Intensity

Group x Error. Are there any significant differences among the
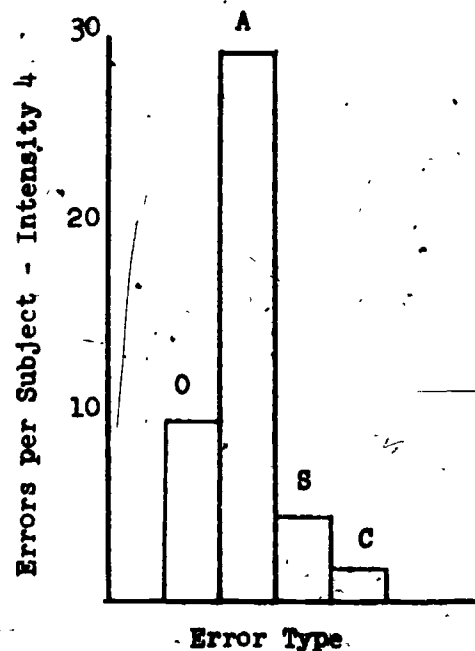three groups of subjects in the frequency of the four error Types
$(0,A,S,C)$?

Group x Error is n.s.
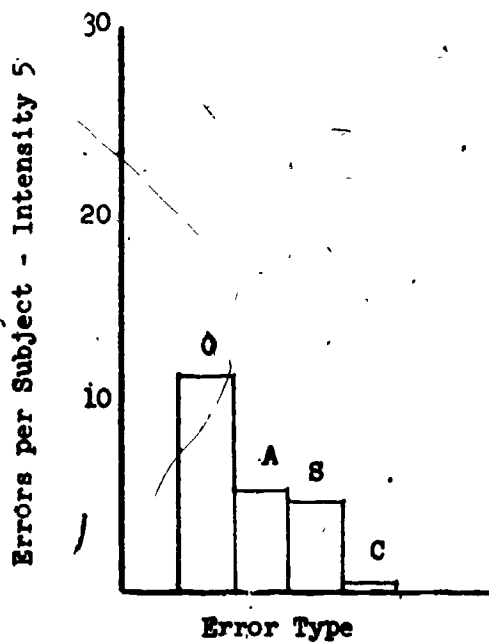
Group x Intensity. Is there any significant difference among the 3
groups of subjects in the frequency of the three error Intensities (3,
4,5)?

Group x Intensity is significant $(p < .01)$. (See Fig. 10 and Graph 9.)

	Intensity		
Groups	3 + 6(SE)	4(DE)	5(DE)
Normals	10.1	45.2	13.9
DW	59.88	45.8	29.2
DD	50.7	45.7	26.0

Figure 10

Errors per Subject - Intensity 5

30

20

10

0

A 8

C

Error Type

Errors per Subject - Intensity 4

30

A

20

0

10

8

C

Error Type

Errors per Subject - Intensity 3 + 6

30

20

10

Graph 8

Frequency of Each of the 4 Types of Error (O,A,8,C)
for the 3 Intensities (3+6,4,5)

Graph 8

Frequency of Each of the 4 Types of Error (O,A,S,C)
for the 3 Intensities (3+6,4,5)
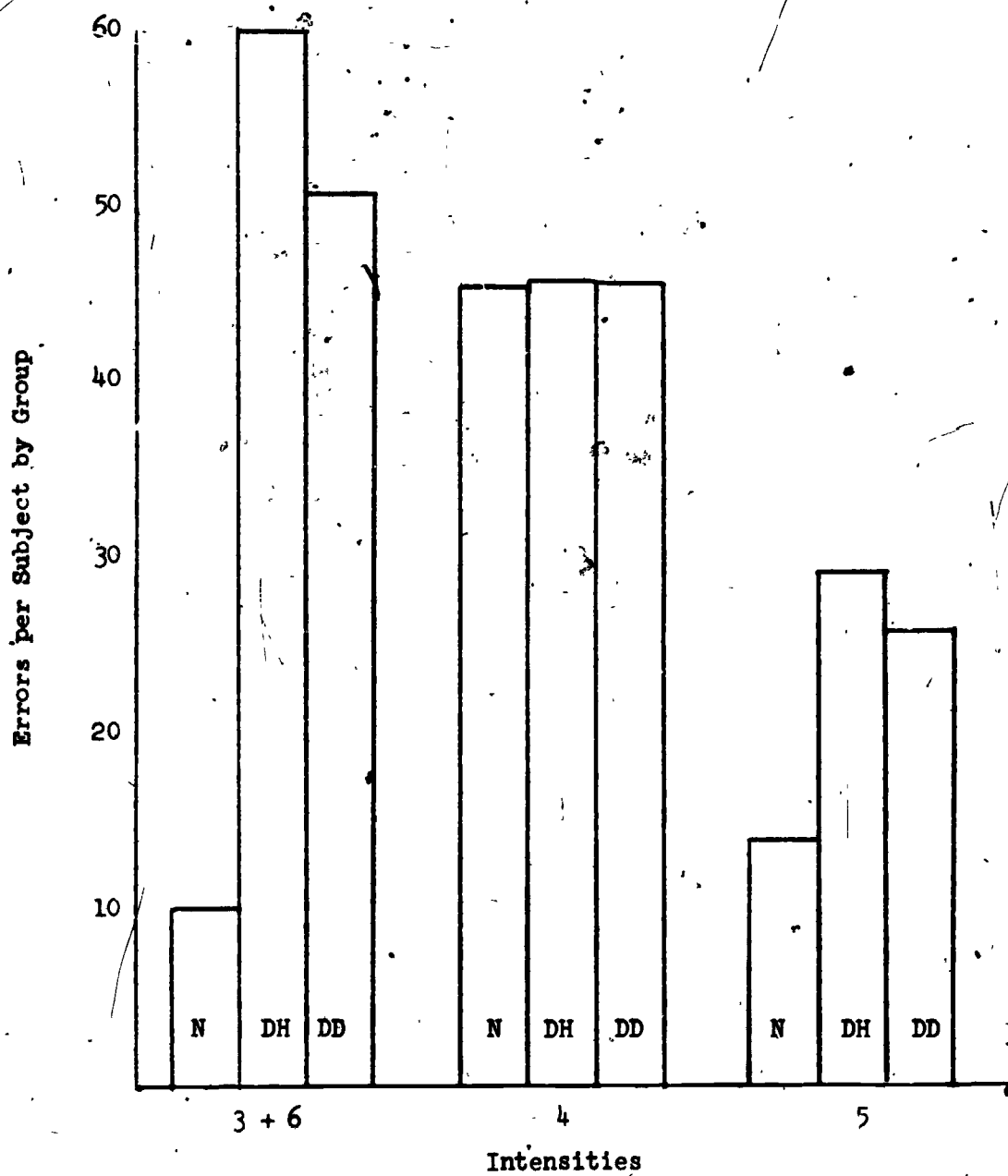
Graph 9

Group by Intensity

TABLE 8

Serious Errors Within Sentences,

Error Type and Intensity

Source of Variance	df	F-statistic
Groups	24,20	1.4
Error Type (0,A,S,C)	3,19	47.2**
Intensity (3,4,5)	2,20	22.9**
Error x Intensity	6,16	28.2**
Group x Error	6,38	2.3
Group x Intensity	4,40	6.3**

** p < .01

All of the variability in Group x Intensity can be accounted for by the difference between the Normals and all the Deaf on Intensity 3 versus the average of Intensities 4 and 5.

4.8.3. Serious Errors Within the Sentences (Parts-of-Speech)

Serious errors within the sentences, in different parts-of-speech. Questions and results follow (see summary in Table 10, p. 109).

<u>Parts-of-Speech Between Groups</u>. (1) In SE alone, are there any significant differences between the three groups of subjects for any of the eleven parts of speech?

For the 11 parts of speech in the SE sentences, there were significant differences between the Normals and all the Deaf subjects on the following measures.

TABLE 9

SE Parts of Speech, Normal Group vs. All Deaf

Part of Speech	df	F-statistic
Copula	1,21	14.4*
Preposition	1,21	21.3**
Indefinite Article	1,21	23.2**
Plural	1,21	14.8*
Mass Noun	1,21	18.8*

*p < .05

**p < .01

There were no significant differences between the two groups of Deaf suojects on any of the eleven parts of speech. (See Table 10, p. 109).

(2) In DE alone, are there any significant differences among the three groups of subjects for any of the 9 parts of speech, averaged over Intensities 4 and 5?

There were no significant differences among the groups in any of the 9 parts of speech in the DE sentences (but cf. analysis of Intensity. 4, below).

Intensity 4 vs. Intensity 5--Parts-of-Speech Within Groups. In DE alone, are there any significant differences between error Intensity 4 (in the direction of SE) and error Intensity 5 (in the direction of DE) for any of the 9 parts of speech, taking each group separately?

In DE alone, there were significant differences between Intensity 4 and Intensity 5 for each group of subjects, as shown in Table 11 (p. 110).

Intensity 4--Parts-of-Speech Between Groups. In DE, on error Intensity 4 (in the direction of SE) alone, are there any significant differences among the three groups of subjects for any of the 9 parts of speech?

In DE, for error Intensity 4 alone, there was only one significant difference: between the Normal group and both Deaf groups on past participles (p < .05). There were no significant differences between the two groups of Deaf subjects.

Intensity 5--Parts-of-Speech Between Groups. In DE, on error Intensity 5 (in the direction of DE) alone, are there any significant differences among the three groups of subjects for any of the 9 parts of speech?

TABLE 10

Between Groups Differences in Frequency of Serious Errors
Within Sentences, for 9 Parts of Speech, in SE and DE

Source of Variance		F-statistic	
		SE	DE
Present tense marker:	N vs. Deaf	6.0	2.0
	DH vs. DD	0.0	1.3
Past tense marker:	N vs. Deaf	11.7	4.7
	DH vs. DD	0.9	0.9
Copula:	N vs. Deaf	14.4*	0.5
	DH vs. DD	0.1	0.0
Preposition:	N vs. Deaf	21.3**	0.7
	DH vs. DD	0.5	0.0
Present participle:	N vs. Deaf	6.5	0.2
	DH vs. DD	1.3	0.0
Past participle:	N vs. Deaf	10.1	4.3
	DH vs. DD	0.9	0.2
Definite article:	N vs. Deaf	7.1	3.4
	DH vs. DD	0.1	0.3
Indefinite article:	N vs. Deaf	23.2**	3.9
	DH vs. DD	5.9	1.8
Plural:	N vs. Deaf	14.8*	6.6
	DH vs. DD	0.0	0.6
Mass:	N vs. Deaf	18.8*	
	DH vs. DD	3.7	
Future:	N vs. Deaf	1.9	
	DH vs. DD	0.4	

* p < .05   (df in all cases = 1, 21)

** p < .01

TABLE 11

DE--Error Intensity 4 ("Corrections") vs.

Error Intensity 5 ("Deafisms") for

Normal, DH and DD Groups

Part of Speech	Normals	F-statistic DH	DD
Present tense marker	6.1	8.8	7.9
Past tense marker	23.9**	19.8**	17.1*
Copula	8.4	8.6	8.2
Preposition	35.9***	3.3	7.3
Present participle	3.3	0.4	0.0
Past participle	26.2**	0.3	0.8
Definite article	3.1	0.9	2.5
Indefinite article	27.6**	27.3**	29.1**
Plural	11.5⁻	24.9**	13.7*

⁻ marginal
* p < .05
** p < .01
*** p < .001

(df in all cases = 1, 21)

In DE, for error Intensity 5, there were no significant differences among the groups for any of the 9 parts of speech.

<u>Normals--Parts-of-Speech in SE vs. DE</u>. For the Normal subjects alone, is there any significant difference between SE and DE in the percentage of errors made in each of the 9 parts of speech common to the two subtests?

For the Normal subjects, the following differences between SE and DE in the percentage of errors in each of the 9 parts of speech are significant:

Past tense marker	(p < .05)	(many more errors in DE)
Copula	marginal	(many more errors in DE)
Preposition	(p < .001)	(many more errors in DE)
Past participle	(p < .01)	(many more errors in DE)

<u>Deaf--Parts-of-Speech in SE vs. DE</u>. For both the Deaf groups together, are there any significant differences between SE and DE in the percentage of errors[5] made in each of the 9 parts of speech? (Since there were no significant differences between the two Deaf groups on SE and DE scores, they were treated as a single group for this question.)

_____

[5]Percentage of errors in SE, for a given part of speech, is defined as the average number of errors per subject committed in that part of speech, divided by the number of opportunities of committing that error. Thus, if there were 100 past tenses in the SE sentences, and a group of Ss made an average of 20 errors per subject involving past tense, the percentage of past tense errors for that group would be 20 per cent.

In DE, many of the errors committed involved the addition of parts of speech which were not present in the original DE sentence. Therefore, in order to calculate the number of opportunities for committing an error in any of the 9 parts of speech in DE, it was necessary to project how many of the 9 parts of speech would have been present, had the sentences been in Standard English. Thus, if there <u>should</u> have been 100 copulas in the DE sentences (if they had been in Standard English) and a group of

TABLE 12

Percentage of Errors in SE vs. DE in 9 Parts of Speech

for Normals and All Deaf

Source of Variance	F-statistic	
	Normals	Deaf
Present tense marker	5.9	16.3**
Past tense marker	14.9*	24.3**
Copula	11.5⁻	7.9
Preposition	84.8***	30.6**
Present participle	5.2	0.7
Past participle	26.0**	0.1
Definite article	0.2	4.8
Indefinite article	9.5	20.0**
Plural	10.0	16.0**

⁻ marginal (df in all cases = 1, 21)
* p < .05
** p < .01
*** p < .001

For the two Deaf groups (here treated as a single group), the
following were significant differences between SE and DE in the percentage
of errors made in each of the 9 parts of speech. (See Table 12, p. 112.)

Present tense marker	(p < .05)	(many more errors in DE)
Past tense marker	(p < .01)	(many more errors in DE)
Preposition	(p < .01)	(many more errors in DE)
Indefinite article	(p < .01)	(many more errors in DE)
Plural	(p < .05)	(many more errors in DE).

Within Groups Errors in SE vs. "Corrections" in DE. The following
questions were asked to determine whether any of the groups of subjects
were omitting (erroneously) the same percentages of given parts of speech
from SE that they were adding to DE ("correcting" in the direction of
SE). For example, the DH group may have omitted 25 per cent of the def-
inite articles from the SE sentences, producing grammatical errors. At
the same time they may have "corrected" the DE sentences by adding 25 per
cent of the definite articles that should have been there, had the senten-
ces been in Standard English.

(1) For the Normal group, is there any significant difference
between SE and DE-Intensity 4 in the percentage of errors made in each
of the 9 parts of speech? (2) For the DH group, is there any significant
difference between SE and DE-Intensity 4 in the percentage of errors made

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subjects added an average of 50 copulas per subject, then the percentage
of errors (Intensity 4--in the direction of SE) would be 50 per cent.
If, in addition, the group added 25 articles per subject, instead of the
projected copulas, there would be 25 per cent copula errors (Intensity
5--in the direction of DE). The percentages are, in fact, normalized
scores for two tests with unequal scales, and can thus be analyzed as
though they were absolute values.

in each of the 9 parts of speech? (3) For the DD group, is there any

significant difference between SE and DE-Intensity 4 in the percentage

of errors made in each of the 9 parts of speech? [Note: Any non-

significant differences in this analysis would indicate that a group

was adding (or "correcting") a part of speech in DE the same percentage

of the time that they were omitting (or erroneously substituting) it in

SE.] Results of the analysis appear in Table 13.

TABLE 13

Percentage of Errors in SE vs. "Corrections" in DE
in Each of 9 Parts of Speech for
Normal, DH and DD Subjects

| Part of Speech | Normals | F-statistic | |
		DH	DD
Present tense marker	0.4	10.1	0.5
Past tense marker	5.7	0.1	0.3
Copula	3.4	0.4	0.2
Preposition	20.7**	0.9	0.5
Present participle	4.8	0.3	1.8
Past participle	18.8**	0.9	4.1
Definite article	2.8	0.2	0.1
Indefinite article	13.7*	5.7	7.7
Plural	5.6	3.8	3.3

* $p < .05$
** $p < .01$
(df in all cases = 1, 21)

Finally, the means and standard deviations were determined for the proportion of the time each group made errors in each part of speech, in SE and in DE-Intensity 4. The results appear in Table 14 (p. 116).

A note on significance: the significance level was arrived at by dividing the original significance level (usually $p < .001$) by the number of hypotheses in the given program. Thus original .001 levels of signifi-cance were reduced to .01 levels (since there were about 10 hypotheses).

TABLE 14

Means and Standard Deviations for Each Group for Percentages
of Errors in 11 Parts of Speech in SE and
9 Parts of Speech in DE-Intensity 4

Source of Variance Part of Speech	Subtest	Normals $\bar{X}$	SD	DH $\bar{X}$	SD	DD $\bar{X}$	SD
Present tense marker	SE	5	5	12	6	11	6
	DE-4	16	16	25	12.5	20	16
Past tense marker	SE	4	4	17	8.5	13	11
	DE-4	20	7	24	16	27	6
Copula	SE	1	2	15	12	16	11
	DE-4	19	15	23	14	23	20
Preposition	SE	4	3	17	7	16	8
	DE-4	32	16	21	9	23	11
Present participle	SE	3	6	21	20	35	37
	DE-4	6	14	12	11	11	11
Past participle	SE	3	6	21	15	29	25
	DE-4	42	31	10	11	6	10
Definite article	SE	5	9	34	20	31	39
	DE-4	7	10	8	8	12	9
Indefinite article	SE	4	4	20	8	12	6
	DE-4	21	14	32	11	27	14
Plural	SE	1	4	20	10	20	17
	DE-4	23	19	36	15	36	16
Mass	SE	0	0	25	12	14	15
Future	SE	0	0	6	12	4	9

N.B. - Underlined items are those in which the Mean is equal to approximately 2 or more times the SD--i.e., items with a reasonable amount of variability.

CHAPTER FIVE

5.1 Discussion

In this chapter, I will explain the significant results of the various data analyses described in Chapter 4. I will then discuss the results in the light of the hypothesis that there is a non-standard dialect of English (or an English-based pidgin), a "Deaf English", that the deaf use instead of Standard English. On the basis of the experimental results, I will also propose some linguistic rules for this "Deaf English".

5.2 Overall Errors

Groups. There was a significant difference between the Normal group and all the Deaf in the frequency of errors, averaged over SE and DE. This result appears to be due to two types of errors:

(1) Perfect/Trivial: The Normal subjects repeated many more SE sentences correctly (or with only trivial errors) than either group of Deaf subjects. This explanation is supported by the analysis in Chapter 4, and will be discussed at greater length in the explanation below.

(2) Omissions: The Normal subjects also omitted many more sentences, in both DE and SE, than either group of Deaf subjects. However, the analysis in Chapter 4 reveals that it is only in DE that the Normals omitted significantly more sentences than the Deaf. This suggests that the Normals found DE sentences more difficult to recall than the Deaf did. This result will be discussed more fully in the explanation of Group x Error for DE, below.

Error. There were significant differences in the average frequencies of the 3 types of overall error, averaged over all groups. The largest part of the variability is accounted for by the difference in frequency between omissions and the other two types of sentence error. This simply means that there were very many fewer sentences omitted than there were sentences perfect (or with only trivial errors), or sentences with one or more serious errors.

Language x Error. The interaction of Language x Error was significant. This interaction can be accounted for by the differences in frequency between trivial and serious errors in SE sentences versus DE sentences. This means that there were very many more sentences with only Trivial errors or Perfect sentences in SE than in DE. There were, concomitantly, very many more DE sentences with Serious errors than there were SE sentences with Serious errors.

Group x Error. The interaction of Group x Error was marginally significant. Further analysis, however, revealed that the difference between the Normal subjects and both groups of Deaf subjects, on sentences omitted versus the other two error classifications, was significant at the .01 level. There was also a significant difference between the Normals and both groups of Deaf on Trivial (or Perfect) versus Serious errors.

This means that the Normal subjects performed very differently from both groups of Deaf subjects with regard to both Trivial errors and Omissions (averaged over both SE and DE sentences). This result will be discussed further in the explanations of Group x Error for SE and Group x Error for DE, below.

Group x Error for SE. In SE, the Normal group repeated significantly more sentences correctly (or with only trivial errors) than either group of Deaf subjects (p'< .01). At the same time, they had significantly fewer sentences with one or more serious grammatical errors than either group of Deaf subjects. (There was no significant difference among the three groups in the number of sentences omitted in SE.)

This result indicates that the Normal subjects had very little trouble with the SE sentences; the sentences were easy enough for normal 9- and 10-year-olds to remember correctly, but not very easy for the 14- and 15-year-old deaf subjects to remember. It thus appears that the SE sentences were representative of the dialect of English used by the Normal subjects (Standard English). But they were probably not representative of the dialect of English used by the Deaf subjects.

Group x Error for DE. In DE, there were no significant differences between the Normal group and the two Deaf groups on the number of sentences Perfect (or with only Trivial errors). Nor was there any significant difference among the three groups on the number of sentences with one or more Serious errors.

However, the Normal group omitted significantly more sentences than either of the Deaf groups. This suggests that the DE sentences were somewhat more difficult for the Normal subjects to remember than for the Deaf subjects. Although this and later analyses indicate that the DE sentences used in the experiment probably are not entirely representative of the dialect of English used by the Deaf, this result (Omissions) does tend to show that the Deaf subjects can remember this "DE", and repeat it, somewhat better than the Normal subjects. Although the DE used here may

not be the true "Deaf English", there is a hint here that we are on the right track.

5.3 Serious Errors - Type and Intensity

Error. There is a significant difference in the average frequencies of the 4 Types of errors (Additions, Omissions, Substitutions and Word-order Changes). Most of the variability can be accounted for by the frequency of Word-order Changes. That is, there were very many fewer Word-order Changes than any other error Type.

Intensity. There were significant differences in the average frequencies of the 3 error Intensities (3 = serious SE error; 4 = error or "correction" in DE sentence in the direction of SE; 5 = error in DE sentence in the direction of DE). This difference can be accounted for by the difference in frequency of errors of Intensity 4 versus errors of Intensity 5.

This result means that in the DE sentences, all three groups of subjects (averaged) tended to make more errors in the direction of SE ("corrections") than in the direction of DE. This result is easy to explain for the Normal subjects: one would suppose that as speakers of Standard English they would be inclined to "correct" a non-standard variety of English to make it more like the Standard. The Deaf, however, are not users of Standard English (cf. the discussions of Group x Error for SE and Group x Error for DE, above), and so it is more puzzling that they would "standardize" non-standard constructions. It may be a result of the way the deaf are taught English in school: they are taught English "rules", and their mastery of them is usually evaluated in tasks involving filling in blanks, or choosing the proper grammatical form

from a number of possibilities. Since in the present experiment the subjects had as much time as they wished to write their responses, it is possible that they "corrected" as they wrote.

Error x Intensity. The interaction of error Type by error Intensity was significant at the .01 level. This means that in Standard English there were more errors involving Omissions than there were in DE, whether of Intensity 4 ("corrections" in the direction of SE) or Intensity 5 ("deafisms"). Furthermore, there were many more Additions to DE that resulted in Intensity 4 errors ("corrections") than resulted in either Intensity 5 errors ("deafisms") or grammatical errors in SE (Intensity 3). This result is understandable in the light of the discussion of Intensity, above, where it was evident that all subjects had "corrected" the DE sentences to some extent. These "corrections" generally took the form of Additions of parts of speech, and yielded errors of Intensity 4.

Omissions and Additions account for most of the variability in this measure. There was a tendency toward more Substitutions in SE, resulting in error Intensity 3 (ungrammaticality), than for either error Intensity in DE.

Since the SE sentences were longer than the DE sentences, and contained more parts of speech, it is not surprising that there were more Omissions and Substitutions in SE than in DE. Nor is it surprising that there should have been more Additions (in the form of "corrections") in the DE sentences than in the SE sentences.

Group x Intensity. There were significant differences between the three groups in the frequencies of the 3 error Intensities. All of the variability in this measure can be accounted for by the difference between

the Normal group and all the Deaf on Intensity 3 versus the average of
Intensities 4 and 5. In other words, the Normal subjects made signifi-
cantly fewer grammatical errors in the SE sentences (error Intensity 3)
than did either group of Deaf subjects. There were no significant per-
formance differences on Intensities 4 and 5 among the three groups.

5.4 Serious Errors - Parts-of-Speech

<u>Parts-of-Speech Between Groups.</u> (1) In SE, there were significant
differences between the Normals and all the Deaf on 5 of the 11 parts of
speech: Copula, Preposition, Indefinite Article, Plural, and Mass Noun.
In other words, the Deaf subjects made most of their errors in SE in
these 5 parts of speech. There were no significant differences between
the two Deaf groups on any of the 11 parts of speech; thus parentage
(deaf or hearing) cannot account for any of these subjects' difficulties
with the SE subtest.

(2) In DE, for the average of Intensities 4 and 5, there were no
significant differences among the groups. (However, cf. the discussion
of Intensity 4 alone, below.)

<u>Intensity 4 vs. Intensity 5 - Parts-of-Speech Within Groups.</u> In DE,
for each group separately, there were a number of significant differences
in the frequency of errors of Intensity 4 versus Intensity 5, in various
parts of speech. For Past Tense Marker and Indefinite Article, all three
groups made significantly more errors in the direction of SE ("corrections")
than in the direction of DE. For Preposition and Past Participle, only
the Normal group made significantly more errors in the direction of SE
than in the direction of DE. For Plural, the two Deaf groups made sig-
nificantly more errors in the direction of SE than in the direction of

DE, while for the Normals this difference was only marginally signifi-
cant. The differences between the Normal and the Deaf groups appear
to be a result of the fact that the Normal group made almost no errors
of Intensity 5 (in the direction of DE) involving Preposition, and
none involving Past Participle. Both Deaf groups made Intensity 5
errors in these two parts of speech.

Intensity 4 - Parts-of-Speech Between Groups. In DE, for error
Intensity 4 alone ("corrections" in the direction of SE), the difference
between the Normal group and both Deaf groups for Past Participle was
significant. This was because almost every Normal subject "corrected"
past participles (usually by adding the requisite morphological ending);
whereas very few of the Deaf subjects did so. This is probably a part
of speech that the Deaf subjects are not very familiar with.

Normals - Parts-of-Speech in SE vs. DE. For the Normal subjects
alone, there were significant differences between SE and DE in the
percentage of errors made in 4 parts of speech: Past Tense Marker,
Copula (marginal), Preposition, and Past Participle. The Normals, as
has been demonstrated, made very few errors in SE. They made most of
their errors in DE in these 4 parts of speech--and most of the "errors"
in all 4 parts of speech were of Intensity 4 ("corrections" in the
direction of SE). (Cf. the discussion of Intensity 4 vs. Intensity 5,
above.)

Deaf - Parts-of-Speech in SE vs. DE. The Deaf groups, on the other
hand, made very many errors in SE within sentences, and about the same
number in DE, except for 5 of the 9 parts of speech. For Present Tense
Marker, Past Tense Marker, Preposition, Indefinite Article, and Plural,

the deaf made significantly more errors in DE. Unlike the Normals,
however, not all of these errors were Intensity 4, "corrections" in
the direction of SE. As the discussion of Intensity 4 versus Intensity
5, above, shows, there was no significant difference for the Deaf
between Intensity 4 and Intensity 5 errors for Present Tense Marker
and Preposition. In these 2 parts of speech in the DE sentences, the
Deaf made about as many errors in the direction of DE as they made
in the direction of SE. It appears, then, that their knowledge of
present tense markers and prepositions is quite different from that
of the Normal subjects.

Within Groups Errors in SE vs. "Corrections" in DE. This analysis
was performed in order to ascertain whether each of the three groups
was "correcting" the same parts of speech in DE that they were erring
on in the SE sentences. Only the non-significant differences were
of interest here. Furthermore, since the Normal group made very few
errors in the SE sentences, any non-significant differences indicated
that they had made very few errors ("corrections") in the DE sentences.
The three significant differences (on Preposition, Past Participle, and
Indefinite Article) between the Normals' performances in SE and in DE-
Intensity 4, are indications that they had "corrected" a significant
number of constructions involving these 3 parts of speech in the DE
sentences.

Neither group of Deaf subjects, however, showed any significant
differences, in any of the 9 parts of speech, between SE and DE-Intensity
4. Since they made very many errors in SE in most of these parts of
speech (cf. Table 13, p. 114), this indicates that they made approximately
the same percentage of "corrections" (Intensity 4 errors) for the same

parts of speech in the DE sentences. This is a very interesting and provocative result, and suggests the existence of "variable rules" among the Deaf subjects, accounting for this variability in performance.

Summary Discussion of Means. Table 14 (p. 116) indicates the percentage of the time that each group made errors in the 11 parts of speech in SE and in the 9 parts of speech in DE-Intensity 4.

For the Normal subjects the mean percentages of errors made in the SE sentences were very low, and the standard deviations very high. Such errors thus appear to be fairly random, and indicate that the Normals really tend to make very few errors in SE.

In DE-Intensity 4, there were only 2 parts of speech where the variability among the Normal subjects was fairly small (SD $\leq$ 50 per cent of the Mean): Past Tense Marker ($\bar{X}$ = 20, SD = 7) and Preposition $\bar{X}$ = 32, SD = 16). This indicates that there was a fair amount of agreement among the Normals as to the necessity of replacing these 2 parts of speech which were missing from the original DE sentences.

For the DH subjects, there were 6 parts of speech in the SE sentences which showed a fairly small variability (SD $\leq$ 50 per cent of $\bar{X}$). These were Present Tense Marker ($\bar{X}$ = 12, SD = 6), Past Tense Marker ($\bar{X}$ = 17, SD = 8.5), Preposition ($\bar{X}$ = 17, SD = 7), Indefinite Article ($\bar{X}$ = 20, SD = 8), Plural ($\bar{X}$ = 20, SD = 10), and Mass Noun ($\bar{X}$ = 25, SD = 12). For these parts of speech, then, there was a fair amount of consistency in the DH group in the percentage of errors they made in SE.

In DE-Intensity 4, the DH group evinced fairly low variability in 4 of the parts of speech in which they had shown low variability for SE. These were Present Tense Marker ($\bar{X}$ = 25, SD = 12.5), Preposition

($\bar{X}$ = 21, SD = 9), Indefinite Article ($\bar{X}$ = 32, SD = 11), and Plural ($\bar{X}$ = 36, SD = 15). As one can see, they tended to correct a greater percentage of each part of speech in DE than the percentage they had erred on in SE. This behavior strongly suggests that the DH group has variable rules at least for these 4 parts of speech--rules that cause them to omit (or otherwise err in) the part of speech in one situation, and to "correct" or replace the same part of speech in another situation.

For the DD group, there were only 3 parts of speech in SE that showed small variability. These parts of speech were Present Tense Marker ($\bar{X}$ = 11, SD = 6), Preposition ($\bar{X}$ = 16, SD = 8), and Indefinite Article ($\bar{X}$ = 12, SD = 6). Performance within the DD group was more variable--less consistent--than in the DH group.

For DE-Intensity 4, the DD group showed fairly small variability in 3 parts of speech, only 2 of which correspond to the parts of speech in SE in which they had made errors. These were Preposition ($\bar{X}$ = 23, SD = 11) and Indefinite Article ($\bar{X}$ = 27, SD = 14). In addition, they consistently "corrected" Present Tense Marker ($\bar{X}$ = 11, SD = 6).

Thus, in 2 parts of speech (Preposition and Indefinite Article) both groups of Deaf subjects acted in the same, consistent way: they made a certain percentage of errors in SE, and a generally similar percentage of "corrections" in DE. In 2 other parts of speech (Plural and Present Tense Marker), only the DH group behaved in this way. Besides this evidence for variable rules, each group consistently (i.e., low variability) made errors in SE (DH consistently made SE errors in past tense markers and confused mass with count nouns;

DD made SE errors in present inflections). Only the DD group con-
sistently made "corrections" in DE on 2 parts of speech (Past Tense
Marker and Plural) without making consistent (low variability) errors
in the same parts of speech in SE. For these 2 parts of speech, some
members of the DD group seem to have a firmer grasp than others of the
SE rules.

5.5 Summary and Conclusions

From the overall analysis performed on the data (Chapter 4), it
is evident that Standard English is not the normal means of communication
of the Deaf subjects, regardless of parentage. They commit very many
errors in SE--significantly more than normal children five years younger
than themselves.

The results of the overall analysis of the DE sentences indicate
that the Deaf subjects found the DE sentences easier to remember and
repeat than the Normal subjects did. (Normals omitted significantly
more DE sentences than the Deaf.) However, comparing the Deaf subjects'
results in SE and DE sentences (overall errors), it is evident that
they found the DE sentences no easier than the SE sentences to recall
and repeat correctly. Sentences in "Deaf English" did not "equalize
the handicap" of the Deaf subjects. It is apparent that certain aspects
of the "Deaf English" used in this experiment are not part of the Deaf
subjects' linguistic competence.

The results of the second set of analyses (errors within sentence--
Type and Intensity) confirm the finding of the overall analysis that
the Deaf found the DE sentences no easier than SE sentences to recall
and repeat. The Normals were shown to have made significantly fewer

errors within the SE sentences (Intensity 3) than the Deaf subjects, which reinforces the finding in the first set of analyses: the SE sentences do represent the linguistic competence of the Normal subjects, but not of the Deaf subjects. Within the DE sentences, there were no significant differences between the Normals and the Deaf either with regard to number of "corrections" (Intensity 4) or with regard to number of errors (Intensity 5). It was necessary to perform analyses within sentences on various parts of speech to see whether the Normals and Deaf performed in precisely the same way on the DE sentences.

The results of the third set of analyses (errors within sentences/ Parts-of-Speech) indicate that although overall scores for errors made in the DE sentences were the same for the Normals as for the Deaf, there were significant differences between Normals and Deaf for errors and "corrections" in specific parts of speech. In DE, the Normals made significantly more "corrections" (Intensity 4) than the Deaf involving prepositions and past participles. There were also similarities and differences between the performances of each group in the relative frequency of DE errors (Intensity 5) versus "corrections" (Intensity 4). All 3 groups made significantly more "corrections" than errors for past-tense markers, plurals, and indefinite articles. But only the Normal group made significantly more "corrections" than errors involving prepositions and past participles.

Thus, it is apparent that the Deaf did not treat the DE sentences in the same way as the Normals did. (There were no significant differences between the performances of the two Deaf groups.)

The bulk of the errors made by the Deaf subjects in both the SE and the DE sentences involved tense and aspect markers, copulas, plural

markers, determiners, and prepositions. The Deaf subjects often inserted these functors into the slots where they logically should have gone in the DE sentences, sometimes incorrectly. Interestingly, they very often omitted these same functors in the SE sentences (cf. Table 14, p. 116). This seems to indicate that the Deaf subjects have learned most, or all, of the SE grammar rules, but can apply them only inconsistently, possibly as an afterthought. The deaf learn these rules in school as part of their grammar programs, but, possibly because the rules are acquired so late and there is so little feedback, obligatory SE rules become optional or variable where the deaf are concerned. From their performance in the DE sentences, it is evident that many of the Deaf subjects know rules of article insertion, plural marking, tense marking, and use of prepositions and copulas. But from their performance in the SE sentences, it also appears that those rules are not fully understood or assimilated. They do not seem to be part of the Deaf subjects' competence. (This lends further support to the idea that such rules are specific to English, and are not linguistic universals.)

I would like to propose the following variable DE rules to explain the performance of the Deaf subjects in certain English parts of speech. ( ) indicates optionality.

Present Inflection

(1) $V + [Pres] \rightarrow V \left(\left\{ \begin{array}{c} \text{-s} \\ \text{-es} \end{array} \right\} \right)$

(2) $BE + [Pres] \rightarrow \left(\left\{ \begin{array}{c} BE \\ AM \\ IS \\ ARE \end{array} \right\} \right)$

Past Tense Marker

(1) $V + [Past] \rightarrow V \left(\left\{ {-d \atop -ed} \right\} \right)$

(2) $BE + [Past] \rightarrow \left(\left\{ {WAS \atop WERE} \right\} \right)$

Article

$ART \rightarrow \left(\left\{ {THE \atop A \atop AN} \right\} \right)$

Plural

$N + [Pl] \rightarrow N \left(\left\{ {-s \atop -es} \right\} \right)$

Mass: There is a strong tendency to overgeneralize all Nouns

(Mass and Count) to Count. Hence Mass Nouns are often

pluralized.

For all these rules, environments have yet to be determined. It
would be worthwhile to investigate which option is taken in a given
situation.

As the rules indicate, the main systematic differences between
SE and DE that were found in this experiment are in low-level morpho-
logical rules. There may be differences in transformational rules--
possibly the non-application of the higher-level SE transformations--but
such differences were not within the scope of this study.

Those DE constructions which the Deaf subjects found "acceptable"
(in the sense that two or fewer Deaf subjects made errors in them) are
presented below. There is a list of the constructions which were
acceptable to both groups of Deaf subjects, as well as lists of the
constructions acceptable to only the DH and only the DD group. There

is also a list of the forms that were acceptable to the Deaf but which

the Normal subjects altered. It should be understood that the Normal

subjects, who know SE--and made almost no changes in the SE sentences--

have the ability to play with language, and sometimes "improved upon"

the DE constructions. (Overall, the Normals made as many errors in DE

as the Deaf. In a few cases, the Normals "out-deafed" the deaf--cf. the

list of forms altered by Normals--omitting more possessive pronouns and

coordinate conjunctions and thus producing even less standard construc-

tions.) This does not detract from the validity of these items as

examples of DE. Only if the Deaf subjects were unable to repeat them

properly were they considered not to be DE.

Not included below are most of those errors which involve the

Deaf subjects' variable rules (hypothesized above).

5.6 DE Constructions Acceptable to All the Deaf Subjects

Sentence:

(1) but John (repeat antecedent instead of using Pronoun)

(2) Jack (repeat antecedent instead of using Pronoun)

(3) I am sorry late

(4) she think so, X

she not smart (omit "enough")

(5) brave to dance (omit "enough")

(6) I sat my chair (or "in my chair")

(7) my house full people

(8) came over my house

and sleep (my house)

(9) many livers

(10) we enjoy very much (omit "it")

(11) you show me (overt use of underlying Pronoun)

where man

(15) I brush my tooth

and wear my clothes (or "the clothes", "clothes")

(16) I am interesting (to) . . .

(17) my brother name

(18) like go downtown (or "to downtown")

(19) hear voice

(21) we have (instead of "there are")

live my street (or "live in my street")

(25) my house painting (or "my house paint . . .")

(26) my front of house (or "my front house")

has large lawn (or "have large lawn")

(27) living-room will put new rug soon

(28) boy little

(29) rabbit too cute.

because rabbit baby

(30) I finish eat

and I full rice (or "rices")

(33) X like to me

(35) many girl pretty (or "girls pretty")

live my street (or "live in my street")

(37) and no sister

(38) Ed fight Dick

and Dick run home (or "ran home")

(39) I finish eat

(40) modern like other house

(41) Mike very sad

about break his arm (or "breaks", "broke")

(42) X got scare

(44) I have a lot of learn from . . .

(45) you tell us

(46) new teacher

what my name (or "what name is", "what is name")

(47) back yard will plant X

(48) my father feed

(49) I go to beach (orig. "I go the beach")

many sands

( ) floor wash

car clean

5.7 DE Constructions Acceptable to DH Subjects Only

Sentence:

(13) I finish[ed] to do

(17) go to wrestle match (1 S substituted "go wrestling")

(20) I have hose (1 S added "a")

(31) many rice (1 S omitted "many"; 2 added "s" to "rice")

(33) send letter me (1 S added Prep)

5.8 DE Constructions Acceptable to DD Subjects Only

Sentence:

(1) like to Alice

(6) and I write

(12) many furnitures

(14) pic e pie   (1 S added Prep)

(16) to learn   (1 S omitted "to")

(24) brother young

(42) because dog   (1 S added "the"; 2 added "a")

(43) alike my brother

(46) ask me

5.9   Changes Made by Normals in DE Constructions

Sentence:

(1) with - 3 omit

(3) I am sorry late - 4 omit "am"

(6) I sat my chair - 4 omit "my"

(8) my house - 3 omit "my"

(12) many furnitures - 7 omit Plural ending

(13) I finish to do - 2 add "what" (to do)

(16) I am interesting - 3 substitute "ed"

   to learn - 4 omit "to"; 1 substitutes "to"

(19) in her room - 3 omit "her"

(21) live my street - 6 add "on"

(25) my house painting - 3 substitute "ed"

(31) many rice - 4 omit "many"

   and I full rice - 4 add "of"

(37) and no sister - 3 add Plural ending

(38) Ed fight Dick - 2 add Past "ed"

   and Dick run home - 2 omit "and"

(42) got scare - 6 add "d"

(43) alike my brother - 4 substitute "like".

(49) I go the beach - 4 omit "the"; 5 add "to"

(50) and ar clean - 3 omit "and"

In general, these changes were not made by the Deaf. The omission of possessive pronouns was an error that only the Normals consistently made. It appears that they had their own idea of what this strange variety of English should look like.

In conclusion, there does indeed appear to be a variety of non-standard English that the Deaf subjects use instead of Standard English. The constructions chosen for the DE subtest of the experiment did not all seem to be representative of the actual variety of English used by the Deaf subjects. Certain constructions were recalled without errors, and others were recalled incorrectly or not at all. Still other constructions were recalled correctly some of the time, while at other times subjects substituted the Standard English form of the construction. (This was especially true of present and past tense markers, articles, plural markers, and prepositions.)[6] It is suggested that in addition to a number of relatively invariant non-standard constructions (invariant for a given geographical location), Deaf English possesses variable rules. Another way of stating the case would be to say that the deaf have learned many (obligatory) Standard English grammatical and morphological rules, but they apply them optionally. An investigation of contextual

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[6]The suggested implicational rule concerning the use of past tense markers in a past-time sentence--i.e., if there is a past-tense marker it will occur on the first verb in the sentence--did not appear to be valid.

or sociolinguistic factors which may condition these variable rules would be valuable.

The real "Deaf English" is probably fairly complex, more complex than most pidgins. It can, however, be considered an instance of a pidginization process, as was suggested in Chapter 3. A longitudinal study of the acquisition of Deaf English would provide insight into this process. It would be interesting to investigate the effects of different educational methods upon the resulting variety of (Deaf) English. It would also be worthwhile to attempt to ascertain how much influence ASL has upon the resultant variety of English. It is possible that such phenomena as omission of articles and past tense markers have nothing to do with interference from ASL, but are simply redundant, non-essential features of English that are difficult to learn and easy to overlook.

The handicap of profound prelingual deafness has created a linguistic minority. Linguistic investigations of deaf persons' (gestural) language competence and of their (societal) language problems can be of great value both to the linguist and to the deaf themselves.

APPENDIX A

Listing of Test Items

Deaf English Sentences

1. John like to Alice but John will can't play with Alice.

2. Yesterday Jack go to home because Jack sore his toe.

3. Yesterday I say my teacher I am sorry late.

4. She think so she not smart to pass test.

5. Many people dance but I not brave to dance.

6. Yesterday I sat my chair and I write letter you.

7. Last night party my house full people.

8. Last Monday Ann came over my house and sleep my house.

9. We ate many livers beans and corns for dinner.

10. We play football long time and we enjoy very much.

11. Policeman say you show me where man.

12. Mother buyed many furnitures for our new house.

13. Yesterday I finish to do then I play ball.

14. I say my father I eat piece pie with ice cream.

15. That morning I brush my tooth and wear my clothes.

16. I am interesting to learn what did Lincoln say.

17. My brother name is Bill go to wrestle match yesterday.

18. Every day my family like go downtown to walk.

19. Girl young heared voice in her room.

20. I have hose and I give water to grass grow up.

21. We have ten families that they live my street.

22. I think all rabbit is soft alike pillow.

23. Today Ann meet man that he write many book.

24. My brother young stay very close my mother.

25. My house painting brown and white and with red roof.

26. My front of house has large lawn and few tree.

27. The living room will put new rug soon.

28. Yesterday dog black run follow boy little.

29. Our team game play tomorrow in Oakland.

30. Rabbit too cute because rabbit baby.

31. I finish eat many rice and I full rice.

32. Tom will can't play ball because Tom sore his hand.

33. Mary like to me so Mary send letter me.

34. Yesterday I drive car but my brother sit chair all day.

35. Many girl pretty live my street now.

36. I am interesting to read about Indian people.

37. Jane say she have three brother and no sister.

38. Last Thursday Ed fight Dick and Dick run home.

39. I finish eat breakfast and I go school.

40. My house not modern like other house.

41. Mike very sad about break his arm.

42. Jim got scare because dog bited him.

43. I know boy that he look alike my brother.

44. I have a lot of learn from my teacher.

45. Father and mother say you tell us where dog.

46. New teacher ask me what my name.

47. Next week our back yard will plant five tree

48. Last night my father feed my baby sister.

49. I go the beach and get many sands in my shoe.

50. Today mother floor wash and father car clean.

Standard English Sentences

51. John likes Alice but John won't be able to play with Alice

52. Yesterday Jack went home because he had a sore toe.

53. Yesterday I told my teacher I was sorry I was late.

54. She thinks she is not smart enough to pass the test.

55. Many people danced but I was not brave enough to dance.

56. Yesterday I sat in my chair and wrote you a letter.

57. At last night's party my house was full of people.

58. Last Monday Ann came over to my house and slept at my house.

59. We ate a lot of liver, beans and corn for dinner.

60. We played football a long time and we enjoyed ourselves very much.

61. The policeman said show me where the man is.

62. Mother bought a lot of furniture for our new house.

63. Yesterday I finished what I was doing then I played ball.

64. I told my father I ate a piece of pie with ice cream.

65. That morning I brushed my teeth and put on my clothes.

66. I am interested in learning what Lincoln said.

67. My brother whose name is Bill went to a wrestling match yesterday.

68. Every day my family likes to go for a walk downtown.

69. A young girl heard a voice in her room.

70. I have a hose and I water the grass to make it grow.

71. There are ten families living on my street.

72. I think all rabbits are as soft as pillows.

73. Today Ann met a man who wrote many books.

74. My younger brother stays very close to my mother.

75. My house is painted brown and white and has a red roof.

76. There is a large lawn and a few trees in front of my house.

77. A new rug will be put in the living room soon.

78. Yesterday a black dog ran after a little boy.

79. Our team plays a game tomorrow in Oakland.

80. The rabbit is very cute because it is a baby.

81. I have eaten a lot of rice and I am full of rice.

82. Tom won't be able to play ball because his hand hurts.

83. Mary likes me so she sent me a letter.

84. Yesterday I drove a car but my brother sat in a chair all day.

85. Many pretty girls live on my street now.

86. I am interested in reading about Indian people.

87. Jane says she has three brothers and no sisters.

88. Last Thursday Ed fought Dick and Dick ran home.

89. I finish eating breakfast and I go to school.

90. My house is not as modern as other houses.

91. Mike is very sad about breaking his arm.

92. Jim got scared because a dog bit him.

93. I know a boy who looks like my brother.

94. I have learned a lot from my teacher.

95. Father and mother said tell us where the dog is.

96. The new teacher asked me what my name was.

97. Next week five trees will be planted in our back yard.

98. Last night my baby sister was fed by my father.

99. I went to the beach and got a lot of sand in my shoes.

100. Today mother washes the floor and father cleans the car.

APPENDIX B

Test Instructions

This is a test of your memory. It is not hard. You will see some sentences on the screen. You will see each sentence for a few seconds. When a sentence comes on the screen, read it. When the sentence goes away, write on the paper the sentence you saw. Write each sentence just the way you remember it.

Some of the sentences may seem funny, or they may not look like good English. Don't worry about that. Don't try to make them better. Just write them the way you remember them.

When you are ready to see the next sentence, type any letter, and the new sentence will come on the screen. Do not write until the sentence goes away.

Do you have any questions?

I will now show you 2 examples, so you can try out the test. When you finish the examples, I will begin the test.

Example 1: _____

_____

Example 2: _____

_____

APPENDIX C

Coding of Errors

A. Error Type (1-9)

   1: Omit entire sentence

   2: Omit word/part of speech

   3: Unrelated sentence

   4: Word-order change

   5: Substitution within part of speech

   6: Substitutions

   7: Additions

   8: Passive to active

   9: Active to passive

B. Error Intensity (1-7)

   1: Effects no grammatical or major semantic change in the
      sentence (lexical change)

   2: Effects no ungrammaticality

   3: Effects an ungrammaticality (for SE only)

   4: Changes DE in the direction of SE

   5: Changes DE in the direction of DE

   6: Is grammatical but anomalous

   7: Omitted via forgetfulness

C. Part of Speech Classification for Use with Error Type

1. Noun	19. Adverb
2. Proper Name	20. Definite Article
3. Pronoun	21. Indefinite Article
4. Relative Pronoun	22. Conjunction (Coordinating)
5. Verb Stem	23. Conjunction (Subordinating)
6. Copula	24. Gender (f)
7. Auxiliary	25. Number (N_{1-10})
8. Modal	26. Day (Monday-Sunday)
9. Tense (Past)	27. Interrogative Adverb
10. Conjugation (Present)	28. Interrogative Pronoun
11. Future	29. Present Participle (-ing)
12. Negative	30. Comparative (-er)
13. to (Infinitive)	31. Superlative (-est)
14. Preposition	32. Locative
15. Plural	33. Mass
16. Possessive	34. Case (for Pronoun)
17. Adjective	35. Past Participle (-ed, -en)
18. Quantifier	36. Subjunctive

Example: Omission of a preposition in column 6 of a sentence, resulting in a grammatical error in SE, would be coded as follows:
(2 - 14, 6, 3) where 2 = Omission (Error Type); 14 = Preposition (Part of Speech); 6 refers to the column; and 3 (Error Intensity) is a serious grammatical error in SE.

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